AMERICAN MACHINIST

INDEX FOR VOLUME 32, 1909----Part TWO.

Explanatory Note.

Illustrated articles are marked with an asterisk (*). Book notices are denoted by a dagger (†). Cross references to a particular initial word may refer to any cognate word beginning in the same way. Thus, a reference from "Screw" to "Tap" would apply equally to "Taps," "Tapping," etc. The cross references are intended to condense the matter and assist the reader, but are not to be regarded as conclusive. So if there were a reference from "Steel" to "Hardening," and if the searcher failed to find the required article under the latter entry, he should not regard it as useless to turn back and look through all the "Steel" entries, or others that the topic might suggest, as he would have done had there been no cross reference.

A

PAGE

Absorbing of an industry. 845
Accident prevention by U. S. Steel Corp. W. H. Tolman. *331
Accidents—Cost: insurance. J. R. Godfrey. 889
Accidents, Industrial. 946
Accidents, Industrial, and insurance. 883, 1058
Accidents, Industrial, Compensation for. 973
"Accidents, Industrial, Prevention." Law and Newell—Fidel. & Cas. Co. †922, 965
Accidents, Prevention, Engineering problem. 1106
"Accounting." E. E. Garrison. †1106
Accuracy—Comparative term. E. Hammler. 125
Accuracy, Unnecessary. 377
W. D. Forbes. 433
W. G. Groocock. *842
R. E. Marks. 981
J. R. Godfrey. 1019
Acetylene generator, Continuous. *989
Acetylene welding; Monarch generator, etc. C. B. Auel. *858
Adapter, Press stroke. H. Harris. *959
Adding machine, Comptometer, Making. *181, *487
Adding, etc., machines—Press dies. *1071
Address wanted—Alfred Syfrig. 424
Advertisements, Replies to. 508
J. A. Anderson, H. M. 920
Aeronautic school, Y. M. C. A. 549
Aeroplane, Bleriot, that flew Channel. *383
Aeroplane—control devices. Cleveslander. *272, 630
Aeroplane design, Safety factors. 715
Aeroplane, First American to buy. 140
Aeroplane, Latham's Antoinette. A. Post. *608
Aeroplane motor, Building, by Syndicat de moteurs E. N. V. Parisian. *817
Aeroplane—"Only a toy." *130
Aeroplane records. Augustus Post. 564
Aeroplane—Santos Dumont No. 20—"La Demoiselle." *793, 1020, 844
Aeroplane, Smallest successful, Herring-Curtiss. *49
Aeroplane, U. S. Signal Corps, Wright. *301
Aeroplanes, American, Comparison. A. Post. *315
(Constructive imagination.) W. H. Booth. 790
Aeroplanes—Aviation, difficult art. 131
Aeroplanes at Rheims and their records; Farman's, etc. A. Post. *515
Aeroplanes, Duty on. 621
Aeroplanes. J. Richards. 985
Aeroplanes of Canadian Aerodrome Co. L. P. Alford. *994
Aeroplanes, Principles and construction. A. Vorreiter. *904, *940
(Kritik der Drachenflieger, reviewed.) †1059
Aeroplanes—Opening of new epoch. 469
Air, Compressed, calculation short cuts—Chart by W. Raymond of Ingersoll-Rand Co. *704
Air, Compressed. F. Richards.
—Volumes, pressures and temperatures in adiabatic compression—Table and chart. *360
—Mean effective pressures in compression or expansion. *663
Air-compressor base of faulty design. H. M. Nichols. *499
Air-compressor discharge pipe, Indicating. S. B. Redfield. *493
Air compressor, Motor-driven, counterbalancing. *773
Air-cooled auto., Franklin, Building. *657
Air discharge—Plotted formula. *530
Air drill, Right-angle attachment. *212
Air hammer, Compound, Bliss. *41
Air jam riveters. W. T. Sears. *441
Air repair table. W. H. Snyder. *413
Air ship. See also "Aeroplane."
Air-ship design, Safety factors. 715
Air ship—"Only a toy." *130
Air ships—Most difficult art. 131
Air—Springfield pneumatic press. *969
Air—Vacuum motor, Baldwin. *992
Alcohol compared with gasoline. 1104
Alinement charts. J. B. Peddle. *529
Alliages, Met., Lecons sur. J. Cavalier. †508
Allis-Chalmers shops, Portable tools. *695, *770
Allowances, Running-fit. W. Sangster. *75, 293
Alloy, Non-shrinking. 705
Alloys, Aluminum. E. F. Davis. *1110
Alloys, Metallic. J. Cavalier. †508
Alsatian machine tools. *15, *566, *848, *1063, *1109
"Alternating-Cur. Motors." A. S. McAllister. †675
Aluminum, Its alloys and impurities. E. F. Davis. *1110
Aluminum, Flux for melting. 1035
Aluminum, Solders for. 186
Aluminum welding, Oxy-acetylene. *521, *1148
Aluminum-wire welding machine. *135
AMERICAN MACHINIST and mathematics. G. Cormack, Jr. 172
Entropy. 419
AMERICAN MACHINIST contributor lost job. 465
AMERICAN MACHINIST, Filing. G. H. Gibbs. 959
F. E. A. 375
H. Terhune. 588
(Clippings.) W. S. Gieb. *789
AMERICAN MACHINIST, German edition. *867
AMERICAN MACHINIST, Saving the. C. Tuells. 548
AMERICAN MACHINIST, Value for treatment of steel. Ben Accord. 786
American Ry. Master Mech. Asso. 463
American S. M. E. See "Engineers."
American Steel & Wire Co.'s methods. 36
Ammeter, Portable, D. C., Westinghouse. *1115
Among the shops. J. R. Godfrey. *257
889, 897, 1138
Angle bender, Large, Estep & Dolan. 298
Angle plate, Adjustable. E. A. Esmold. *199
Angle-plate rolling machine at Smith-Premier factory. *812
Annealing. See also "Hardening," "Furnace."
Annealing air-hardening steel, New stunt. R. D. Bromley. 1044
Annealing carbon tool steel. T. Du Pont. 440
Annealing furnaces, Am. Gas. E. F. Lake. *455
Annealing gear blanks. J. Haig. 791
Annealing high-speed steel. A. T. Sutton. 421, 1101
W. G. Groocock. 810
J. Haithwaite. 1101
Annealing castings. J. R. Godfrey. 898
Anti-chattering device. X. 79
Antoinette monoplane, Details. A. Post. *608
Apprentice education, Cincinnati. 444, 712, *719
Apprentices, Training of. 213
W. Peters. 882
Apprenticeship problem, Fundamentals. 89
Arc-turning tool. A. N. H. *208
Arcs, Planing. J. R. Baker. *875
Areas, Tables of. S. H. Ralston. 962
Artsmithing. (By E. Schwartzkopf.) E. A. Dixie. *231
H. D. Gowan. 422
(Western blacksmith — R. D. Bromley.) E. A. Dixie. *584
Asbestos for babbitting. C. A. Markle. 288
Assembling dept., Organization. A. Spangenberg. 170
Assembling stand, Premier auto. motor. *369
Australia, Trade. M. de Moreira. 346
Automatic. See "Lathe" (sub-entry "Turret,") and "Screw" (sub-entry "Screw machine.")
Automobile absorbs carriage industry. 845
Auto. cam-shaft grinding machine, Norton. *1060
Auto. construction—Alloy steels. J. A. Matthews. 82, 338
Auto. cylinder and piston finishing. Hugh Dolnar—Cartercar. *7
—American Simplex. *52
Auto. cylinder, Machining. J. McIntosh. 857
Auto. cylinder work, Pierce shops. *1150
Auto. engine dynamometer Turbine. *885
Auto. engine valve, Machining. R. Croysdale. *373
Auto. engines, Pierce-Arrow, Testing with fan brake. D. Ferguson. *277
Auto. etc., gears, Testing. *321, *379, *389
Auto. horsepower table. F. W. Brady. 829
Auto. knife-grinding outfit. R. W. Davis. 289
Auto. makers, Warning to.. 884
Auto. parts, Welding, Oxy-Carbi. *990
Auto. pistons, Grinding. A. W. Rittey. *27
Auto., Rambler, joint hanger, Boring. *261
Auto. shops, Premier, Features. *369
Auto. tires, Making. S. B. Redfield. *191
Auto. work notes; gears, etc. J. R. Godfrey. 890, 897
Auto. work, Large Toledo presses for. *1107
Auto. work, Seleroscope in. A. F. Shore. *982, *1029
Autos. for 1910. 674
Autos., Franklin, Building. F. H. C. *657
Autos in N. Y. city—"Machine has taken away the job." *265
Avery steam turbine. 590
Aviation. See also "Aëroplane."
Aviation. J. Richards. 985
Aviation—Most difficult art. 131
Axle journals, Burnishing tool for. *463
Axles Car, European, Grinding. H. Darbyshire. *728
Axles, Franklin auto.—Making; testing. *662
Axles, Keywaying—Holroyd miller. *1159

B

Babbitt, Repairing metal articles with. *912
Babbitting, Asbestos for. C. A. Markle. 288
Babbitting furnaces, Producer gas for. O. W. Middleton. *669
Babbitting crosshead, Penn. shop. *1084
Babbitting jig, Crosshead. *946
Babbitting on surface plate. M. E. Dawson. *1093
Backing-off attachment, Self-contained. W. J. Kaup. *449
Backing-off device. M. H. Ball. *241
Backing-off gear teeth, Franklin auto. *659
Bakery, The greatest. G. F. Stratton. *244
Balance, Running, machine, Norton. *1023
Balancer at Allis-Chalmers shops. *700
Balancing device. Anthony. *380
Ball. See also "Bearing."
Ball-bearing apparatus, Neubabelsberg; Stribeck's and other testing machines. H. Hess. *1122

206320

PAGE

Ball-bearing pipe center, etc. H. Pearman. *468, *1006
Ball-bearing typewriter, Smith-Premier, Building. *811
Ball bearings, Gages and fixtures for testing. Hess-Bright Mfg. Co.'s. *21
Ball center. Wulfruna. *670
Ball expansion drive stud. *1011, 1012
Ball-socket boring machine, Portable. *696
Ball sockets, Boring bar for. H. C. Williamson. *320
Ball thrust washers, Proportions. O. Savillion. *355
Balls for bearings, Standard, Making. S. B. Redfield. *126
Bar, Boring. See "Boring."
Base, Air-compressor, Faulty design. *499
Beam compass, Modified. F. Sweet. *250
Beam shear, Hydraulic, Watson-Stillman. *299
Beam shear, "S. & N." *344
Bearing, Ball, apparatus, Neubabelsberg. *1122
Bearing, Ball, for shafting. United Bearings Co.'s. *379
Bearing, Ball, hanger, Hess-Bright. *1157
Bearing, Ball, Horizontal-thrust, Hess-Bright. *44
Bearing—Ball thrust washers. *355
Bearing, Ball, typewriter, Smith-Premier, Building. *811
Bearing rollers, Grinding. H. Darbyshire. *728
Bearing, Jig for boring. M. E. Dawson. *986
Bearing, Self-oiling, Wheaton's. *342
Bearing, Step, of spinning lathe. *1149
Bearing, Surfaces for. J. R. Godfrey. 1019
Bearings, Ball, Gages and fixtures for testing, Hess-Bright Mfg Co.'s. *21
Bearings, Franklin auto., Making. *661
Bearings, Half, Machining. C. S. *1140
Bearings, Making steel balls for, Standard. S. B. Redfield. *126
Bearings, The surface of. 1011
Belt-drive change for planer. G. H. Handley. 32
Entropy. 78
A. A. Ball, Jr. *81
H. Maplethorpe. 169
Anthony. 421
Belt drive, English Whittle leather link. F. C. Perkins. *370
Belt drives vs. positive. Con Wise. 326
Belt feeds in Eng. A. Herbert, Ltd. 80
Belt records, Why Sammy keeps. W. Osborne. 643
Belt shifter. Japanese Engineer. *290
Belt shippers, Roller, on planers. H. E. Potter. 492
Belt surface-horse power chart. *523
Belt tightener, Leland sensitive drill. *971
Belts, To have them tight, slacken them. S. C. McKeown. *209
Bement, W. B., and his tools. R. H. Victory, J. Richards. *1119, *1121
Bench center, Artisan School's. *1159
Bender, Angle, Large, Estep & Dolan. 298
Bending eye for shackle bar. *1129
Bending fixtures—Lanston Monotype. *111
Bending flat stock on edge, Fixture for. J. R. Jarvis. *74
Bending jig, Simple. W. H. O. 875
Bending large tubes. Tube Bender. *1000
Bending type-bar hanger. *815
Berlin, American exhibition in. 214, 711
Bevel gear. See "Gearing."
Bevel square, Small. T. H. N. *1048
Binding American Machinist, Machines for *4
Blackboard drawing machine. G. B. Cooper. *461
Blacksmith art work. *231, 422, *584
Blanking and bending tool for button-head end of lever. H. Harris. *625
Blanking and piercing tools, Making set of. H. Harris. *480
G. E. Gay. 1007
Blanking tools, Sectional, for electrical work. E. Klaps. *247
Bleriot monoplane that flew Channel. *383
Blue Chip steel exhibition. *115
Blueprint frame, Oesterlein Mach. Co.'s. *447
Blueprint-paper holder, Brown's. *925
Blueprint-washing and drying machine, Williams, Brown & Earle's. *258
Blueprints, Taking out wrinkles. J. C. Austin. 746
Blueprinting frame and carrier. L. M. Collins. *1052
Board, 60-deg., Noyes, Emmert Mfg. Co.'s. *634
Boat, Motor, producer gas plant. 308
Boiler-plate work, Double radial drill for. I. W. Chubb. *779
Boiler repair—Expansion clamp. *915
Boiler-tube ferrule extractor. *416, *1095
Boiler-washout doors, Threading studs. *539
Bolt, Adjustable, Red Wing. *757
Bolt-heading dies. F. O. Means *42
Bolt-pointing machine, Webster & Perks. *635
Bolting, Re-, locomotive frame. 946
Bookbinding machines. S. B. Redfield. *5

PAGE

BORING.
—Ball-socket boring machine, Portable. *696
—Bar, Boring, for ball sockets. H. C. Williamson. *320
—Boring and facing tool. D. Brown *626
—Boring and milling machine, Beaman & Smith. *1158
—Boring attachment, Portable shaper. *771
—Boring, drilling and milling machine, Horizontal, Fosdick. *848
—Boring, drilling and milling machine, Horizontal, Newton. *552
—Boring mill, Colburn, New. *1155
—Boring mill, Cutting large gear on. C. E. Barret. *1051
—Boring mill, Vertical, 30-in., Colburn. *380
—Boring mills, Alsatian, Grafenstaden. *566
—Boring on adjustable multiple drill. A. Spangenberg. *626
—Cams, Boring-mill fixture for holding. T. R. Stark. *540
—Circular dividing, Accurate, in lathe; boring holes. G. C. Gay. *249
—Cylinder-boring attachment, Drill press, Rockford. *101
—Cylinder-boring heads. J. McIntosh. 857
—Cylinder-boring machine, Baker Bros.' *968
—Cylinder-boring machine, Vertical, spindle, Hoefer. *593
—Cylinders, Cartercar and American Simplex—Boring heads, fixtures, etc. H. Dolnar. *8, *54
—Deep boring of shaft—How would you do job? M. J. W. *838
M. B. Stauffer. *1100
H. D. Chapman. *1101
—Drilling, boring and milling machine, Horizontal, Fosdick. *848
—Drilling-machine arms, Sensitive radial. Fixtures for boring. J. Crosby. *251
—Driving boxes, Boring. *946
—Fixture, Boring, Locating studs on; bracket-boring fixtures, etc. W. L. Waterhouse. *913
—Fixtures, Boring, for bench-lathe heads. F. W. B. *287
—Flywheel boring, using wooden bar. A. Dane. *956
—Gasolene-engine work, Boring methods used in—Buffalo Gasolene Engine Co.'s—Boring engine bosses on lathe; wristpin holes; piston rings. *1034
—Gear case, Franklin auto., Boring. *659
—Horizontal boring machine, Cleveland. *41
—Horizontal boring machine, Old, Bement's. *1120
—Jig-boring tool holder, Adjustable. P. Campbell. *1049
—Jig-boring tool. L. E. Salmon. *208
—Jig for boring in drill press. M. E. Dawson. *986
—Jigs, Boring on miller. *119, *413
—Lathe headstocks and tailstocks, Boring machines for. Hendey Machine Co.'s. *228, *629
—Milling-machine columns, Boring, by Oesterlein Mach. Co. *447
—Pierce auto., valve chambers, Boring. *1150
—Planing job on boring mill—Split pulley. J. Van Pelt. *1067
—Roll, Boring crooked hole in. F. J. Town. *347
—Straight holes, Boring in lathe. B. Landsdown. *1004
—Tire-boring mill, Horizontal. Breuer, Schumacher & Co.'s. *1018
—Tool, Boring, and reamer, Cleveland. *135
—Tool, Boring, for E. N. V. aero. motor cylinder. *818
—Tools, Special, for boring universal-joint hanger. M. Dawson. *261
—Universal horizontal boring machine with long bed. Universal Boring Mach. Co.'s. *425
Bossing job, Looking for. W. Osborne. 393
Boston Gear Works' fire. 1013
Boston Water Dept.—Making gate valves. *774
Bottle cap, Making. W. J. Kaup. *1086
Bowl, Brass, Spinning, by Chadwick Bros. *1149
Boxes, Driving—Boring and Facing. *946
Boy, Opportunity he has in shop. 423
Brace, Planer. M. F. Parsons. *55
Bracket, Bevel-gear, Machining. *998
Bracket - boring fixtures. W. L. Waterhouse. *913
Brake drums, Serrating. F. J. Town. *347
Brake for ship. E. S. Newton. 210
Brake pawl. R. W. Davis. *890
Brake, Prony, Compensating. *178
Brass Coppering. O. Johnson. 165
Brass valve bolts of pumps, Wanted mixtures for. J. P. L. 1094
Brazing cast iron. J. M. May. 540
G. Tyro. *1131
Brazing conical tubes. B. A. De Mutte 169
Brazing furnaces, Oil-burning, Rockwell. *778

PAGE

Brazing, Note on. 443
Brazing outfit, liquid-gas, Blau. *432
Brayton, A. P., Death of. 47
Brennan monorail car. *980
Brick press, Automatic. H. F. Atkins. *689
Bridge trusses. Cantilever. *836
"Briquetting Tests." C. L. Wright. †173
British army, Small-arm requiremnets. 694
British tariff commission and machinery trade. A. J. Wolfe. 286, 429, 508
Broaching fixture for cams. A. Dane. *417
Building materials, Fire-resisting properties. 340
Building shops and other things too well. R. E. Marks. 981
Burglary, Experiment in. F. H. C. *888
Burnishing tool for driving - axle journals. E. N. Owen. *462
Burring tool. Cy. Press. *1142
Burton Fils, Caution by. 884
Bush extractor. J. T. Towlson. *1095
Buttons, Set of four, Starrett. *382
Buttons, Toolmaking accuracy without. W. J. Kaup. *505
G. Hess. *840

C

Cabinet for filing clippings. W. S. Gleb. *867
Cableways at Panama. *109
Calibrating apparatus for high-pressure gages, Watson-Stillman. *885
Caliper. See also "Gage," "Micrometer."
Caliper gage, Combination, Roehm's. W. G. Zinsmeister. *138
Caliper gage, Inside and outside. H. E. Curtis. *786
Calipers, etc.—Dividing and squaring tool. *418
Calipers for screw threads—Browne's, of White Dental Mfg. Co.—Roller. M. E. Anderson. *665
F. C. Scribner. *292
R. K. Melvin. *709, *211
L. D. Burlingame. 840
F. J. McDonald. *955
L. A. Purcell. *1000
Calorimeters, Bomb, for coal. *411
Cam bolt, Grinding lobes. J. R. Jarvis. *464
Cam cutter, Universal, Rowbottom. *1108
Cam-shaft grinding machine, Norton. *1060
Cam-shaft holes, Premier auto., Machining. *369
Cam slots, Monotype, Milling. *114
Cams, Boring-mill fixture for holding. T. R. Stark. *540
Cams, Broaching fixture for. A. Dane. *417
Cams, Gas-engine, Turning. G. H. Gibbs. *73
Canadian Aerodrome Co.'s aeroplanes. *994
Canal, Panama, Machine-made. *103
Cantilever constructions. Cantilever. *836
Capacity, Machine-tool, Indicating. Entropy. 583
Car dumper, German. F. C. Perkins. *490
(Hudson Riv. Coal Co.'s.) M. H. Ball. *877
Car-wheel fits—Hydraulagraph. *391
Car-wheel grinding device, Norton. *730
Car-wheel lathe, Sellers. *40
Car, Monorail, Brennan, Scherl. *980, *1135
Cars, R. R., Unloading. S. B. Redfield. *309
"Carbon-Monoxide Formation in Gas Producers." Clement and Adams. †173
Carbonizing alloy steels. 82, 338
Carbonizing, Experiments with gases for. Olsen and Weissenback. *156
"Carnegie," Nonmagnetic ship. E. A. Dixie. *356
Carriage industry, Absorbing of. 845
Carriage, Tool, for special work, Chipman. *951
Carriers, Two. E. N. Owen. *462
Cartridge making, Neubabelsberg. *440
Case hardening. See "Hardening."
Cash-register keys, Simple hand press for assembling. M. F. Bates. *627
Casing-stress problem. I. G. Norman. 749
S. M. Woodward, J. S. Meyers. 1053
Cast iron. See "Iron," etc.
Cast links, Repairing metals with. *912
Casting. See also "Foundry."
Casting iron around brass. Clevelander. 422
Casting outliner. E. J. Wilson. *76
Castings, Correct metal for—Link-Belt foundry. A. Emrie. *622
Castings, Machine, Demand for better. 844
Catalog, "Any old," for foreigner. 470
Catalogs, Position of manufacturers' names on. F. L. Gager. 1052
Center, Ball. Wulfruna. *670
Center, Bench, and centering machine, Tool-room, combined. Artisan School's. *1159
Center-clamp block, Making. J. Goetz. *781
Center finder, Draftsman's. T. S. Quay. *481
J. E. Sweet. 841
Center, Metal for pattern work. H. Smith. *1007
Center of face-plate fixture, Locating. W. L. Waterhouse. *913

PAGE

Center, Pipe, Ball-bearing. H. Pearman. *468
Center punch. Cy. Press. *1142
Centers, Pipe. H. T. Clark. *917
A. B. *1006
Centers, Laying-off. P. Campbell. *1004
Centering gage, Gear-cutter. T. Square *543
Centering guides by Am. Loco. Co. *1130
Centering small stock in lathe. W. Hebert. *707
Centering tool, Sensitive. M. Jacker. *588
Centering work with milling cutter, Gage for. H. D. Chapman. *797
Centrifugal-pump power, Figuring. *491
Chain block, Triplex, Yale & Towne. *509
Chain—Sprocket teeth. C. C. Myers. *263
Chains welded electrically. *240
Chart vs. equation. Entropy. 78
Chart, Wheel, for thread-micrometer readings. L. A. Purcell. *1000
Charts, Graphical. J. B. Peddle. *523
Chasers for Landis die heads, Making. *313
Chattering, Anti-, device. X. 79
China, Trade. M. de Moreira. 472, 547
Chinese machine shop. Texas. *952
Chip from McCabe lathe. *122
Chips at different speeds. H. S. Millar. *818
Chips, Tool for making. C. Hyden. *1142
Chisels, Cold and cape, Lynn. 133
Chrome steels. J. A. Matthews. 82
Chuck construction, Horton, New features. *971
Chuck details, Interesting, Whiton. *1016
Chuck, Draw-in, for concentric and excentric work, Jarvis. *847
Chuck, Drill, Colt, Ball-bearing. Standard Machy. Co.'s. *633
Chuck, Drill, Loewe. W. Pockrandt. *807
Chuck, Drill, Simple auto. H. L. Thompson. *416
Chuck, Elliptical balanced, Pryibil's. *926
Chuck, Emergency 2-jaw. N. M. P. *745
Chuck for gage cover. *669
Chuck for T-slot mills. W. Ochse. *1121
Chuck, Hex. spring, Making. G. E. Gay. *1141
Chuck key, Design of. F. Reuter.
Chuck, Screw, for pattern shop. J. Brown. *565, 841, *964 *621
Chuck, Tapping, Thompson. *1109
Chuck, Turret, Indexing. R. Stephens. *285
Chuck, 2-jawed, Automatic, Cleveland. *551
Chucks, Lathe, Use and abuse. R. Charles. 841
E. A. Dixie; Renmos. *964
Chucking grinder, Bryant. *803
Chucking lathe, 10-spindle, Colt Armory. *97
Chucking work, Interesting, Kempsmith. J. Goetz. *781
Cincinnati, Co-operative education. 444, 712, *719
Cincinnati Metal Trades meeting. 1154
Circles, Short cut for figuring circumferences by long hand. L. E. Dudley. 317
Circular dividing in lathe, Accurate. G. C. Gay. *249
Clamp, Expansion. R. A. Anderson. *915
Clamp for segments, Patternmakers'. D. Brown. *626
Clamp, Parallel. J. H. Bentley. *1140
Clamp, Work, Adjustable, Howell & Murray. *553
Clamping devices for drill jigs, etc. *69, *110
Clamping hangers to I-beams. A. W. Wackerman. *876
"Clermont," The. E. A. Dixie. *475
Cleveland Technical High School. 254
Clipping filing cabinet. W. S. Gleb. *867
Clippings, Filing. Con Wise. 1057
Clocks, Automatic. S. B. Redfield. *557
Clockwork, Lubrication by kerosene vapor. R. W. Davis. 75
Clutch, Coil, Farrel F. & M. Co. *1110
Clutch, Friction, design. J. Richards. *327
Clutch, Friction, Positive. E. F. Noyes. *1028
Clutch, Internal, Pulley with, Wheaton's. *343
Coal, Sampling and analyzing, by U. S. Geol. Survey. *410
Coke firing in foundry cupola with oil burner. R. H. Palmer. 866
Coke making at Connelsville; coke drawing and loading machine. G. E. Stratton. *244
Collars, Special, for milling-cutter arbors. G. J. Luck. *165
College graduates, Why manufacturers dislike. F. W. Taylor, W. Taylor, Entropy. 640, 919, 937
Collet, Universal, Cleveland. *1016
Colombia, Trade. M. de Moreira. 137
Coloring furnaces, American Gas. *455
Colt auto. pistol, Making. F. H. C. *95
Combination machine, Portable, Niles. *698
Combination machine tool. F. Bement's. E. A. Dixie. *1076
Combination-square kinks. R. S. William. *706
Commissions, Uniform, on machine tools. 711
Compass, Beam, Modified. F. Sweet. *250

PAGE

Compass for ellipses. W. Gribben. *294
Compass—Nonmagnetic ship. *357
Compasses for side of octagon. *522
Compressed, "Compressor." See "Air," "Gas."
Comptometers, Machines for making. *487, *181
Computer, Machine-screw. W. J. Warner. *123
Computing-machine parts, Press dies for. F. A. Stanley. *1171
"Concrete." J. C. Trautwine, Jr. †845
Concrete, Fire-resistance of. 340
Concrete, Surface treatment of. 582
Condenser, Automatic suction-pipe, for steam pumps. G. Rennerfelt. *180
Conical bearings, Re-alinement of shaft with. J. E. Sweet. 780
Connecting-rod design. Instructor. 33
Connecting rod working through driving wheel. M. H. Ball. *501
Connecting rods, Chart for. *524
Conservation, Fire losses and. 590
Control, Machine, and levers. Cleveland. *272
T. A. Dicks. 630
Coolant, Action of. A. H. A. 335
F. Haithwaite. 628
H. Jonson. 750
R. B. 789
W. H. Booth. 790
C. Deutsch. 1055
A. W. Adams. *1068
Cooling, Water, arrangement. T. K. Powrie. 498
Co-operative courses, Three years. H. Schneider 444
Coping machine, Hydraulic, Watson-Stillman. *299
Copper, Hardening. W. Mor. 212
Coppering brass. O. Johnson. 165
Cordage, Machines that make. Columbian Rope Co.'s, Watson Mach. Co.'s, Internatl. Harvester Co.'s, and Prieto Mach. Co.'s. *395
Core. See also "Foundry."
Core for converting 3-part into 2-part mold. G. Buchanan. *37
Core oven, Novel, Johnson's. *344
Core ovens, Outside-fired. Nordberg Mfg. Co.'s. *59
Cost of work, Wages, hours. 589
E. A. Dixie. 919
Cost systems. Entropy. 714
"Costs, Dissertation on." R. W. Long. †1059
Counterbalance, Air, Morton shaper. *772
Countershaft frame, Machining. W. H. Vickell. *624
Countershaft, Variable-speed, Moore & White. *42
Countershaft, Wall. Am. Watch Tool Co.'s. *679
Countersink for burring. Cy Press. *1142
Couplings—Machining square holes. *1098
Court of patent appeal. E. J. Stoddard. 580
Cracks in locomotives, Detecting. 947
Crane, Gantry, Single-leg. *56
Crane hook, Flexible. W. B. Beebe. *887
Crane hooks, Strength. W. Rautenstrauch. *615, *1066
Con Wise. 919
E. J. Loring. *1068
Crane, Jib, Portable, Whiting. *296
Crane signal device. F. E. Sperry. *1090
Cranes, Handling heavy work without. 883
Cranes in old windmills. *686
Crank cases, Premier auto., Boring. *369
Crankpin, Truing. H. E. Curtis. *461, 627
Crankpin turning machine, Dreuer-Schumacher. *218
Crank-planing machine, Newton. *1063
Crankshaft, Aero., Plugging oil holes. *817
Crankshaft, Correcting error—Shortening. H. T. Clark. *917
Crankshaft error, Correcting. H. T. Clark. *999
Crankshaft Test. P. Longmuir. *740
Crankshafts, Running balance of. *1023
Critical points, Hardening steels. 77, 252, 544
Crosshead-babbitting jig. *946
Crosshead, Babbitting, Penn. shop. *1084
Cuba, Trade. M. de Moreira. 307
Cup leather, Making. Gymnite. *956
Cupboard. Sample—Making comptometers. *489
Cupola, Foundry, Firing coke with oil burner. R. H. Palmer. 866
Curtis, R. P., Death of. 345
Curves—Empirical formulas. J. B. Peddle. *523
Cut-off machine, Hot saw as. M. C. Conan. 294
Cutter. See also "Tool," "Chasers," "Milling," "Backing-off," "Hardening," etc.
Cutter for serrating brake drums. F. J. Town. *347
Cutter-grinding kink. E. W. H. *290
J. B. *630
J. G. *1006
Cutter, Hobbing, Humpage. 168, 212, 630, *671, *963
Cutter, Inserted-tooth, Alsacienne. *17

PAGE

Cutter, Milling, Broken, Repairing. P. A. Scott. *1004
Cutters for O. K. tool holders, Forging. P. H. Robinson. *179
Cutters, Formed, Fixture for grinding. W. O. Harrap. *839
Cutters gave cause for trouble, Why. 563
Cutters, Milling, Grinding in lathe. A. F. Kunze. *1032
Cutters, T-slot, Chuck for. *1121
Cutting action when turning, Influence of speed on. H. S. Millar. *818
Cutting compounds, etc., Experience with. H. Jonson et al. 750, 335, 628, 789, 790, 1055, *1068
Cutting process, Oxhydric. E. F. Lake. *910
Cutting tests with Dynamograph. *349
Cylinder, Auto., Machining. J. McIntosh. 857
Cylinder-boring attachment. Drill-press, Rockford. *101
Cylinder-boring machine, Baker Bros.' *968
Cylinder-boring machine, Vertical, 2-spindle, Hoefer. *893
Cylinder design. Instructor. 33
Cylinder, E. N. V. aero. motor, Boring tool for. *818
Cylinder measuring with combination square. *706
Cylinder work, Pierce shops. *1150
Cylinders, Auto., Finishing. Carter-car and American Simplex. H. Dolnar. *7, *52
Cylinders, Gas-engine, Shape of. W. C. Searle. *672

D

Da Vinci, Leonardo. E. P. Buffet. *731, *821, *868
Daylight and working hours. Entropy. 542
Dealers, Buying tools from. Entropy. 714
Design, Steam-engine, Current practice. Instructor. 36
Diagrams—Empirical formulas. J. B. Peddle. *523
Diamond laps. W. H. Ebelhare. *19
Die, Press. See "Press."
Die, Threading. See "Screw."
Dies, Bolt-heading. F. O. Means. *72
Difficult things, Learn to do. Entropy. 125
Dimensioning detail drawings. P. H. Henning. *166
F. C. Scribner. 467
H. Pearman. *748
G. S. Slingerland. *1102
Disk method for locating holes. *987
Disks, Cutting spirals in, in lathe. Chips. *499
Disks, Steel, Lacquering. *32, *750
Dividers to find side of octagon inscribed in square. G. Lisle. *522
Dividing and squaring tool. L. T. Cook. *418
Dividing, Circular, Accurate, in lathe. G. C. Gay. *249
Dog, Miller, Equalizing, M. B. Hill. *43
Dog, Round steel, for split patterns. J. Brown. *621
H. Smith. *1007
Door checks, Machining. A. B. Mann. *746
Door, Rolling steel, foundry. *58
Doors, Washout, Threading studs. R. Brown. *539
Drafting. See "Drawing," "Blueprint."
Drawer pulls, Making. W. L. Wolfram. *957
Drawing die. See under "Press."
Drawing Shelby seamless tubes. *599
Drawing temper in emery. S. W. Green. 1000

DRAWING, DRAFTING.

—Beam compass, Modified. F. Sweet. *250
—Blackboard drawing machine. G. B. Cooper. *461
—Board, 60-deg., Noyes. Emmert Mfg. Co.s. *634
—Casting outliner. E. J. Wilson. *76
—Dimensioning detail drawings; limits for threaded work, etc. P. H. Henning. *166
E. C. Scribner. 467
H. Pearman. *748
G. S. Slingerland. *1102
—Dividers for side of octagon. *522
—Drafting-room trick—Listing parts; tracing cloth. C. Pitts. 886
—Draftsmen's cells. R. W. Davis. 305
—"Drawing." (Poetry.) S. A. M. 224
—Ellipses, Compass for. W. Gribben. *294
—"Industrial Drawings. Elementary Principles." G. Jepson. †508
—Lamp, Drawing-board; Link-Belt Co.'s drafting room. J. F. Schott. *86
—Lettering method. R. W. Davis. 912
—"Machine Shop Drawings." F. H. Colvin. †549
—"Mechanical Drawing for Trade Schools. C. C. Leeds. †1059
—Paper, Fastening and backing up. H. R. Ash. *88

PAGE

DRAWING, DRAFTING.

—Radius and center finder. T. S. Quay. *481
J. E. Sweet. 841
—Scale, Convertible. E. J. Lawrence. *1142
—Square and protractor, Kelsey's. *847
—Table, Drafting, Washburn shops. *717
—Table, Multiple. L. E. Dudley. *250
—Triangle for flat-head screws. *373
—Triangle kink. A. Folk. *839
Dredges at Panama. *108

DRILL.

—All-geared drill, 24-in., Barnes. *757
—Attachments, Drill-press, Rockford —Milling; cylinder-boring; several multiple-spindle ones. *101
—Bolt, Adjustable, Red Wing. *757
—Boring on adjustable multiple-spindle drill. A Spangenberg. *626
—Breast drill, North. *677
—Breast drill, "Simple," Willey. *93
—Chuck, Drill, Colt, Ball-bearing. Standard Machy. Co.'s. *633
—Chuck, Drill, German—Loewe & Co.'s—Making new tang on damaged drill. W. Pockrandt. *807
—Chuck, Simple automatic. H. L. Thompson. *416
—Cincinnati-Bickford drills, New line; sensitive drill; 21-in. machine with stationary head; sliding head and tapping attachment. *676
—Colt auto. pistol, Making. *96
—Drift, Automatic, Armstrong Tool Co.'s. 1064
—Drill press, Frontier, Improvements. 1062
—Drill press, Small portable. R. O'Neal. *1141
—Drill press with universal table, Robertson. *297
—Drilling and milling machine, Alsacian. *1109
—Drilling and milling machine, Knight. *259
—Drilling and tapping machine, High-speed, Cincinnati-Bickford. *471
—Drilling and tapping machine, Kern. *553
—Drilling, boring and milling machine, Horizontal, Newton. *552
—Drilling casting too large for drill press. E. A. Dixie. *171
—Drilling central holes at right angles through round stock. Cy. Press. *959
—Drilling machine designed for threading taps, Hoefer. *259
—Drilling small holes in large work. 1059
—Early drilling machines—Nasmyth's double-pillar; de Coster's French drill press; French radical-drill foundations. *654
—Facing tool, Adjustable, inside. C. Eisler. *958
—Figures, Steel, Cutting on drill press. E. J. Johnson. *541
—Four-spindle drill, American Watch Tool Co.'s. *679
—Friction-driven drill press, Barry & Zecker. *134
—Gang drill, 4-spindle, with sliding head, Cincinnati-Bickford. *753
—Grinder, Drill, Wilmarth & Morman's. *926
—Grinding machine, Automatic, made from old drill. *369
—High-speed drill, Sibley. *800
—Horizontal drilling machine, Four-headed, W. F. & John Barnes. *1157
—Jig, Drill. See also "Jig."
—Jig for boring bearing in drill press; holding and adjusting drills. M. E. Dawson. *986
—Milling attachment, Hinckley. *634
—Milling attachment for upright drill, Bliss. *717
—Multiple drills for comptometers. *488
—Portable drill machine, German, Collet & Engelhard. *134
—Portable drills, Allis-Chalmers shop. *695
—Radial drill and tapping machine, W. E. Gang. *927
—Radial drill, Double, for boiler plate work. Spencer & Co.'s. I. W. Chubb. *779
—Radial drill, 36-in., Dreses. *1062
—Radial-drilling machine, Asquith. *1157
—Radial-drilling machine, Sensitive, arms, Fixtures for boring. J. Cosby. *251
—Right-angle attachment for air drill. H. A. Bertram. *212
—Safes, Ely-Norris, Drilling work on; jigs, etc. *893
—Sensitive-drill combinations, Taylor & Fenn. *1017
—Sensitive-drill design, New features —4-spindle Leland drill; belt tightener. *971
—Sensitive drill press, Motor-driven, Rockford. *551
—Sensitive drill press, Riveting on. *1096

PAGE

DRILL.

—Sensitive drill, 12-inch, Willey. *472
—Sensitive radial drills. American Tool Works Co.'s. *592
—Slate and Marble, Drilling. 305
—Smith-Premier factory — Drilling, reaming and tapping machine; drilling attachment for auto. screw machine; automatic drilling machine for type bars. *812
—Snap washer. J. B. Chipman. *576
—Socket, "Flatwist" drill, Cleveland. *136
—Speed drill, Quick-change, Villinger. *968
—Tang troubles. Machinist. 421
—Transferring drill. E. A. Dixie. *81
—Tube finishing drills. G. Hess. *163
—Twist-drill attachment, Surface grinder with. Wilmarth & Morman Co.'s. *802
—Twist-drill milling machine, Bliernatzki's. *427
—Twist drills and their tangs—Sellers proportions. F. A. Halsey. *26
J. Stevenson. 252
(Barth key.) F. Oyen. 252
—Twisted drill, High-power, Pratt & Whitney. *298
—Typewriters, Remington, Making—Multiple-spindle drilling machines. *931
—Upright drill press, Old, Bement's. *1119
Drive. See also "Speed," "Rope," "Gearing," etc.
Drive, Planer belt, change. 32, 78, *81, 169, 421
Drive, Power, Curious. Du Pont. *486
H. O. Allen. 842
(Electric driving.) A. M. B. 1056
Drives, Lathe, Two German, Dohringer. *634
Driver, Equalizing, for miller, M. B. Hill. *43
Driving boxes, Loco., Carrier for. *462
Drop hammer. See "Hammer."
Drum shell, Large, with spiral grooves, Molding. L. F. Cook. *1010
Drying molds, Hauck method. *175
Dumpers, Car, etc. *309, *490, *877
Dynamograph, Metal, and results. Ohio State University's. W. A. Knight. *349
Dynamometer, Transmission and recording. J. W. Hughes. *953
Dynamometer, Turbine, Herschell-Spillman, for auto engines. *885

E

Eccentric holes, Two parallel, Fixture for machining. E. W. *1050
Echoes, Oil-country. W. Osborne (with discussion). 77, 81, 145, 252, 337, 367, 393, 468, *491, 544, 569, 643, 749, 856, 1055, 917, 1145
Ecuador, Trade. 87

EDUCATION.

—Apprenticeship. 89, 213, 882
—Cleveland Tech. High School. 254
—Co-operative courses, Cincinnati, Three years. H. Schneider. 444
—Engineering Edu., Soc., Proceedings, etc. †173, 1153
—Fallacy of pedagogical view of trade training. Instructor. 443
—Foremanship courses and qualities needed by embryo engineer; Lowell Institute. Entropy. 28
—Getting to work after commencement. 155
—Harvard Grad. School App. Science. 922
—Industrial education, Immediate importance. 340
—Industrial education, Social side. P. Kreuzpointner. *718
E. H. Fish. 1039
—Industrial education. P. Kreuzpointer. 79
—Industrial training, Notes and comments on. J. Vose. 916
S. M. H. 1144
—Laziness, Proper place. Con Wise. 1085
—Learn to do difficult things, Entropy. 125
—Machine Tool Builders' convention —E. P. Bullard, Jr., on creation of machinists; F. A. Geier on industrial education in Cincinnati; M. A. Coolidge on Fitchburg method. 711
—School, Trade, Don't sell toy machine tools to. E. H. Fish. 947
—Shop, Trade-school. M. P. Higgins. 1103
—Teachers, Industrial, Training, Cornell. 966
—Trade schools, Public. 1153
—Why manufacturers dislike college graduates. F. W. Taylor. 640
W. Alton. 919
Entropy. 937
—Williamson free school of trades. J. M. Shrigley. 939
—Worcester trade school. Entropy. 205
(Buildings.) E. H. Fish. *651

PAGE

"Efficiency as a Basis for Operation and Wages." H. Emerson. †845
Electric fan driving grinder. *488
Electric hoist, Rasmus. *717
Electric lamps, Incandescent, Westinghouse, Making. *141
Electric-motor blanks, Indexing device for notching. *121
Electric-motor drive for Star lathe. *925
Electric-motor speeds, Standard, Proposed. 711
Electric-motor starter, Water-pail. *809, 964
Electric-motor starters. Elec. Controller & Mfg. Co.'s. *218
"Electric Motors." Norman G. Meade. †173
Electric Motors, A. c. A. S. McAllister. †675
Electric welder. R. F. Williams. *1040
Electric welding, Thomson and Toledo machines. E. F. Lake. *233
"Electrical Apparatus, Questions and Answers about." Clayton and Craig. †424
Electrically driven machine tools, Allis-Chalmers shops. *695, *770
Electro-micrometer. G. J. Murdock. *1025
Elevator, Electric, Automatic, Burdette-Rowntree — Making comptometers. *489
Ellipses, Compass for. W. Gribben. *294
Elliptical balanced chuck, Pryibil's. *926
Ely-Norris safe, Blowing open. *888
—Processes of manufacture. *893
Employed men only need apply. G. P. Pearce. 203
Employers' liability, etc. 883, 890, 946, 965, 973, 1058
End mill, hollow mill and chuck. Pedro. *669
Mack. *964
Engine, Aeroplane, building, by Syndicat de moteurs E. N. V. *817
Engine, Auto. power. F. W. Brady. 829
Engine beds, Allis-Chalmers, Portable tools at work on. *697, *772
Engine fuel, Producer gas for. E. A. Allcut. 1091
Engine, Gas, for hand-cars, Fairbanks-Morse. 197
(Lubricating gasolene engines.) O. M. Flather. 339
"Engine, Gas, in Theory and Practice." A. C. Mehrtens. †214
Engine, Gas, indicator-card formula. *527
Engine, Gas, Nonmagnetic ship's. *357
Engine, Gas, piston pins. *366
Engine, Gas, water-cooling arrangement. T. K. Powrie. 498
Engine, Gas, Rice 2-cycle double-acting. H. Greene. *721
Engine, High-speed, Growth. J. E. Sweet. *318
Engine pistons, What they endure. Superintendent. 956
Engine, Producer-gas, Motor-boat. 308
"Engine, Steam." C. H. Benjamin. †1106
Engine, Steam, design, Current practice. Instructor. 33
Engines—Empirical formulas charted. *523
Engines, Gasolene, Testing with fan brake. D. Ferguson. *277
Engines—Newcomen, Savery, Cooke's rotary. E. P. Buffet. *10
Engines, Franklin auto., Building. *657
Engines, Gaso., Buffalo, Boring methods. *1034
Engines, Premier auto., Machining; assembling. *369
Engineer's right to be. 139
Engineers, A. S. M.—Gear teeth. 38
—Standard threads (discussed.) 211, *292, *628, *665, *709, 840
—Oct. meeting—R. C. Carpenter on N. Y. fire system. 716
—Nov. meeting—Concrete beams; curved machine members. 922
—Annual meeting. 1064, 1088
Engineers and machinists. W. D. Forbes. 433
W. G. Groocock. *842
Engineering in 18th century. E. P. Buffet. *10
Engineering Soc. building, Fulton exhibit. 554
English machinery trade and tariff commission. 286, 429, 508
Engraving dies by Keller automatic machinery. S. B. Redfield. *535
Engraving machine, Multiple pantograph. F. Seidler. *1096
Engraving machine, Type-matrix. *1042
Engraving on drill press. E. J. Johnson. *541
Entropy system of paying labor. Entropy. 492, 1145
W. Osborne. 917
T. H. N., C. H. Smith. 962
Escapement wheels, Press tools for. *935
Estimating by 'phone. Terry. 474
Experience? What is. J. R. Godfrey. 190
Wayfarer. 788
Experimental work and mfg. should be widely separated. 965
Export trade. See "Trade."
Exposition, American, in Berlin. 214, 711
Eye bending for shackle bar. *1129

PAGE

F

Face-plate fixture, Locating center. W. L. Waterhouse. *913
Face plate, Friction-driven. *696
Facing castings in lathe. H. Jonson. *374
Facing tool, Adjustable, inside. C. Eisler. *958
Fan brake, Testing gasolene engines with. D. Ferguson. *277
Fan heaters. W. H. Miller. 899
Entropy. 1143
Feed boxes, New Haven lathe. *91
Feed, Roller, Wood screw machine. *43
Feed, Wire, Screw-machine, Wells. *924
Feeds, Belt, in Eng. A. Herbert, Ltd. 80
Feeds, Belt vs. positive. Con Wise. 326
Feeder, Printing-press, Automatic. *1
Felt & Tarrant Co.'s work. *181, *487
Ferrule extractor. R. P. M. *416
Ferrule extractor. J. T. Towlson. *1095
Ferrule-riveting tool. A. M. Jones. *407
Fiber, Punching. M. Dale. *915
Fiber, Turning tool for. *20, 376, 629
Figures, Steel, Cutting on drill press. E. J. Johnson. *541
File, Boswell. *924
File-teeth angles, Protractor attachment for. E. Herbert. *271, 642
File teeth—Herbert's tests. W. Gribben. 160
Files, How to order. 130
Filing AMERICAN MACHINISTS. G. H. Gibbs. 375
F. E. A. 588
G. Tuells. 786
Filing clippings, etc. Con Wise. 1057
Filing clippings, Cabinet for. W. S. Gieb. *867
Filing technical papers. H. Terhune. *789
Filing jig, Lanston Monotype. *114
Filing jigs for Colt pistol. *100
Fire losses and conservation. 580
Fire-resisting properties of building materials. 340
Fit, Shrink, problem. G. J. Lemmens. *769
M. R. Stauffer. 963
J. R. Little. 1005
H. R. G. 1007
J. R. Godfrey. 1019
Fit? What is a good running—Allowances by Dodge, Watt and other companies; table. W. Sangster. *75
G. H. Handley. 293
Fits—Limits for threaded work. *166, 467, *748, 843
Fits, Wheel, Obtaining accurate records. *391
Fitchburg, Industrial education. M. A. Cooledge. 713
Fixture. See also "Jig," "Gages," "Rolling," "Bending," "Boring," "Broaching," "Milling," "Filing," "Supporting," "Drill," "Lathe," "Hammer," "Press," etc.
Fixture for machining two parallel eccentric poles. E. W. *1050
Fixtures, Making. W. L. Waterhouse. *913
Flange-machining record. J. E. Sweet. 897
Flanges, Press tool for turning. W. G. Groocock. *972
Floors, Fire-brick, Protecting, when treating high-speed steel tools. M. Dogecla. 1096
Flowers, Iron. E. A. Dixie. *231, 422, *584
Flue-cutting machine, Ryerson. *1109
Flying machine. See "Aeroplane."
Flywheel boring, using wooden bar. A. Dane. *956
Flywheel-testing pit at Purdue University. C. H. Benjamin. *362
Follow-up letters. Entropy. 714
Foreign trade. See "Trade."
Foremanship courses, etc. Entropy. 28
Forges, Oil-burning, Rockwell. *776
Foremen, noise, junk. Con Wise. 758
Forging, alloy steels. J. A. Matthews. 82
C. U. Scott. 338
Forging cutters for O. K. tool holders. P. H. Robinson. *179
Forgings, Drop, reduce costs. R. Croysdale. *373
Formulas, Empirical, Derivation of. J. B. Peddle. *523

FOUNDRY.

See also "Pattern."
—Bossing job, Looking for. W. Osborne. 393
—Casting iron around brass. Clevelander. 422
—Castings, Machine, Demand for better. 844
—Core for converting 3-part into 2-part mold—Bevel clutch-wheel mold. G. Buchanan. *37
—Core oven, Novel, Johnson's. *344
—Firing coke in cupola with oil burner. R. H. Palmer. 866
—Grids, Gating and molding. S. Jones. *146
—Ingot molds, Machine-molded. E. H. Mumford. 484

PAGE

FOUNDRY.

—Iron foundry and material yard, Nordberg—Cranes; storage; rolling steel door; outside-fired core ovens; cupolas; transfer truck for charging car; heating system, etc. *56
—Link-Belt foundry—correct metal for castings. A. Emrie. *922
—Mold-drying method, Hauck. *175
—Molds, Permanent, for foundry—Materials for molds and cores; effect of molds on castings; effect of molten iron on molds; temper of castings; machining qualities; molds for trap, cam, claw hammer, pipe, etc. E. A. Custer. *148
—Molding frame, Divided. J. R. Moorhouse. *314
—Molding large drum shell with spiral grooves. L. F. Cook. *1010
—Molding machine and collapsible pattern for cone pulleys. C. Nosrac. *329
—Pattern and rigging for molding worm screws. M. E. Dawson. *596
—Pipe patterns for single castings. R. Faite. *404, *1054
—Type making—Molding machine, etc. *1042
Frame, Countershaft, Machining. W. H. Vickell. *624
Franklin autos., Building. F. H. C. *657
Friction. See also "Clutch," "Reverse."
Friction and noise. 674
A. M. Wachter. 920
Friction, Planer, Repair on. S. V. B. *959
Frictions, Straw-fiber—Chart. *526
Fulton and steam navigation. 798
Fulton celebration. E. A. Dixie. *475
Fulton exhibit, Engineering Soc. building. 554
Furnace floors, Protecting. M. Dogecla. 1096
Furnace, Hardening, for lead and cyanide baths. U. S. Gas Furnace Co.'s. *1018
Furnace, Oil, Heat-treating, Tate-Jones. *134
Furnace-temperature control instrument. Am. Gas Furnace Co.'s. *1151
Furnaces, Babbitting, Producer gas for. *669
Furnaces for coal analyses. *410
Furnaces, Hardening and annealing, Continuous, for oil or gas, Rockwell. *510
Furnaces, Oil-burning, Rockwell. *776
Furnaces to anneal, harden and color, American Gas. E. F. Lake. *455
Fusion welding. See "Welding."

G

Gage. See also "Caliper," "Micrometer."
Gage, Centering. Gear-cutter. T. Square. *543
Gage, Depth. J. Hubbard. *820
Gage for centering work with milling cutter. H. D. Chapman. *797
Gage, Hacksaw. Wulfruna. *670
Gage, Hight, Mastrangal's. *345
Gage, Hight, Serviceable. I. L. Cole. *1127
Gage, Indexing, for type wheels. *353
Gage, Lathe—Making comptometers. *488
Gage, Protractor, File-tooth, Herbert. *271, 642
Gages and fixtures for testing ball bearing, Built-up snap gages and others. Hess-Bright Mfg. Co.'s. *21
Gages for making comptometers. *181, *487
Gages—Good reputation vs. good work. E. A. Dixie. 898
Gages, Hydraulic and other high-pressure, Calibrating apparatus for, Watson-Stillman. *885
Gages, Internal-threading. H. Chinn. *881
Gages, Lanston Monotype shop. *115
Gages—Limits of threaded work, etc. 467, *166, *748
(Wells Bros.' limits.) 843
Gages—Scale attachments. T. H. N. *1048
Gages, Starrett—Telescoping, for holes; gage with four tapered leaves; set of buttons; double scratch gage. *382
Gages, Thread. *292, *665, *709, 840, *955, *1000
Gages, Thread, Device for measuring. A. T. Sutton. *784
Gages, Thread, for screw-machine work. F. L. Gayer. *745
Gages, Thread tool, Remington shops. *937
Gaging—Combination-square kinks. *706
Gaging deep bore hole. *1101
Gaging device for mica disks. A. F. Castonguay. *785
Gaging Hendey-Norton lathes. *225
Entropy. *629
Gaging—Size blocks. H. E. Curtis. *500, 710
Gaging steel balls. *129
Gas, Acetylene, generator, Monarch; Linde back-pressure valve, etc. C. B. Auel. *858

PAGE

Gas compressor, Indicating. S. B. Redfield. *493
Gas engine. See "Engine."
Gas, Liquefied lighting, Fusion welding with—Blau process. A. Gradenwitz. *431
Gas, Producer, for babbitting furnaces. O. W. Middleton. *669
Gas, Producer, for engines. E. A. Allcut. 1091
Gas, Producer, plant—Motor-boat "Marenging." 308
Gas, Producer, plant, Du Bois. Phila. Gear Wks'. *153
(Producer gas. vs. steam power.) Con Wise. 672
"Gas Producers, Formation of Carbon Monoxide in." Clement and Adams. †173
Gases for carbonizing, Experiments with. Olsen and Weissenback. *156
Gasolene engine. See "Engine," "Auto.," "Aeroplane," etc.
Gasolene and alcohol compared. 1104
Gate valves, Cost of manufacturing by Boston Water Dept. *774
Gate valves, High-pressure, Pelton, for salt water, San Francisco. G. J. Henry, Jr. *705
Gating and molding grids. S. Jones. *146

GEARING.

Alloy steels; Hardening methods. 84
—Auto. gears. J. R. Godfrey. 890
—Back gearing, Jas. Watt & Co.'s. J. R. 504
—Bevel clutch wheel, Molding. *37
—Bevel-gear blank, Chucking; tools for various gears as used by Kempsmith M. M. Co. J. Goetz. *781
—Bevel-gear blank turning lathe, Bridgeford. *594
—Bevel-gear frames, Measuring appliance to test alinement of axes in. W. Pockrandt. *768
—Bevel gear, Novel way of cutting. C. P. Wicks. 403
—Case-hardened pinions, Life of. 855
—Change-gear ratios, Computing when lead is odd or decimal. F. J. B. 372
—Change-gear sweeps, Boring. *626
—Cut gears, Various, Efficiencies—Test methods and curves for bevel, worm and crown gears; Probst gear on auto., etc. G. E. Quick. *321
—Cutter, Gear, Automatic, Waltham. *756
—Cutter, Gear, Early—Wood & Light's. W. J. Kaup. *901
—Cutter grinding kink. E. W. H. *290
J. B. *630
J. G. *1006
—Cutter, Gear, centering gage. T. Square. *543
—Cutting gears without proper index plates. J. Bailey. 887
—Cutting large gear on boring mill. C. E. Barret. *1051
—Dividing and squaring tool *418
—Double-helical gearing, Machine-cut, Wust's—Milling and hobbing; staggered teeth; keying method, etc. P. C. Day. *273
C. Wust. 468
(Another keying method.) Attic. *964
—Feed boxes, New Haven lathe. *91
—Franklin auto.—Rounding gear teeth; boxing gear case; backing-off clutch gear in special lathe fixture. *659
—Gages for comptometer gears. *184
—Gear-cutting machine Automatic, Cincinnati. *550
—"Gear Cutting Mach'y." R. E. Flanders. †378
—Gear-wheel cutting rig. C. Petitjean. *727
—Gear 77-tooth, Cutting. W. E. McArdell. 473
W. H. S. 792
(Emergency indexing 125 teeth.) Daniel F. Moriarty. 792
—Gears, Odd-shaped, type-cylinder, of Coy press, cut by Strohm, of Dayton Pneu. Tool Co. *55
—Grinder, Gear-tooth, Baker. *256
—Grinding in gears. J. R. Godfrey. 889
F. C. Mason. 1138
—Hob, Large, Brown & Sharpe. *42
—Hobber, Gear, Rhenania, Schütte's; milling gear blanks, etc. *754
—Hobber, Gear, Small, Schuchardt & Schütte. *554
—Hobber, Lees-Bradner. *216
—Hobbing process, Humpage. P. A. Thompson. 168
P. C. Day. 212
J. B. 630
W. G. Groocock. *671
H. J. Eberhardt. 963
—"Kegelraeder, Herstellung." E. Linsel. †341
—Locating gear to mesh with three given gears. W. L. Benitz. *29
—Milling machine, No. 3, Cutting 48-in. gear on. O. D. Tuttle. *963

PAGE

GEARING.

—Noisy gears. J. R. Godfrey. 150
(Production of silent speed gears — Annealing; contact; locating noises, etc.) J. Haig. 791
—Pulley, Gear used as. *336
—Slotting attachment, Cutting internal gears with. C. Cloburn. 376
—Spur gear, Large English. Scott & Hodgson, Ltd's. *607
—Spur gears, Factors for proportioning; solid and split gears; weights, etc. C. H. Logue. *571
—Testing device for Rambler auto. gears. M. E. Hidiegan. *389
—Testing machine, Bevel and spur-gear, Cincinnati-Bickford. *379
—Tooth, Gear, Involute, International standard—P. V. Vernon's letter, A. S. M. E., etc. 38
—Variable-speed gear. Pederson's. A. W. Jones. *67
—Wooden windmill gearing, etc. *681, *960
—Worm and gear cutter, Schütte. *880
—Worm gear, Cutting without hob. E. S. C. *418
W. Gribben. 587
E. M. Davids. 961
—Worm-gear hobber, Old, Whitworth. *656
—Worm-gears. J. R. Godfrey. 939
(Worm and spiral.) W. P. Hunt. 1144
—Worm-gearing troubles and remedy. J. Wilson. 289
H. Sibbering. 792
—Worm wheel 16-in. and its worm, Cuting in lathe, by Builders' Iron Fdy. *485
—Worm wheels Testing. A. C. Wild 1057
—Worms—Pitch table. J. B. 1049
Geological Survey's coal analyses. *410
German edition, AMERICAN MACHINIST. 548
German industrial success. 589
German locksmithing, Fine. Artist Artisan. *542
—(Mechanics.) A. F. Kunze. 1055
"Germany, Made in." J. Richards. 393
Getting to work after commencement. Entropy. 155
Gibs, Shaper, V and square. 78, *80
Gibbing Forms of. J. Richards. *896
Good reputation vs. good work. A. E. Dixie. 898
Goodyear Tire & Rubber Co. *191
Gooseneck tool. G. J. Murdock. *463
"Graduating-stroke" mortising. J. Richards. *637
Grating on which lathe beds are rubbed down. *226, *629
Gray Telantograph. *496, *1079
Grease-lubrication tests, Cornell. *612
Great days for machine shop. 548
Greenhouse heating, antique. *13
Grids, Gating and molding. S. Jones. *146

GRINDING.

See also "Laps."
—Am. Loco. Co.'s Hammett radius grinder. *1128
—Automobile cam-shaft grinding machine, Norton. *1060
—Balls, Bearing, Grinding. *127
—Cam bolts, Grinding lobes. J. R. Jarvis. *464
—Combination grinder, Robinson. *428
—Cutter, Gear, grinding kink. E. W. H. *290
J. B. *630
(Milling cutters.) J. G. *1006
—Cutters, Formed, Fixture for grinding. W. O. Harrap. *839
—Cutters, Milling, Grinding in lathe. A. F. Kunze. *1032
—Cylinders and pistons. J. R. Godfrey. 898
—Cylinders, Cartercar, Grinding on Heald grinder. *8
—Die sharpener, Natl. Mechy. Co.'s. *969, 1062
—Disk grinder, Double spiral, Besly. *219
—Disk grinder, Horizontal, Besly. *426
—Disk grinder, Ransom. *677
—Disk grinder with underbelt drive, Gardner. *509
—Disk-wheel press, Gardner. *924
—Drill grinder, Wilmarth & Morman's. *926
—Duplex internal-grinding machine, Bath. *595
—Electric fan driving small grinder on lathe. *488
—Fixture for grinding drills used in boring bearing. *986
—Gear-tooth grinder, Baker. *256
—Grinding and lapping in Black country; axle box. H. D. *745
—Gears, Grinding in. J. R. Godfrey. 889
F. C. Mason. 1153
—Grinding machine, New type. Bryant Chucking Grinder Co.'s. *883
—Grinding machine, Notes on design of —Traversing wheel or work; spindle drive; slide for wheel carriage; cross-feed mechanism; table; heads; etc. Con Wise. *408

PAGE

GRINDING.

—Grinding practice—Grinding practice, Modern, Examples in — Bearing rollers, guns, special shafts and car axles—European practice on Norton machines; radial truing device for Norton grinder. H. Darbyshire. *728
("Pebbles.") D. Tappan. 961
—Grindstone, Water supply. G. L. Colburn. *974
—Hob-grinding attachment, Brown & Sharpe. *217
—Knife-grinding outfit, Motor-cycle. R. W. Davis. 289
—Lapping tool edges. J. O. Surface. 875
—Pistons, Auto., Grinding. A. W. Rittey. *27
—Plain grinder, Modern. *133
—Red-lead putty grinder. R. A. Anderson. 747
—Rubber platen rolls, Grinding. *817
—Safes, Ely-Norris, Grinding. *893
—Sleeves, Grinding internally. U. S. Garde. 420
—Surface grinder, Sizing duplicate work on. H. R. Gilliam. 951
—Surface grinder with twist-drill attachment, Wilmarth & Morman. *802
—Surfacing machine, Adamite—Vertical and horizontal belt grinders; tube- and shaft-grinding machine. *132
—Tool grinder, Single-wheel, Sterling. *93
—Tool-holding head, Universal. Brown & Sharpe's. *967
—Traverse-spindle grinder, Points regarding. W. H. Sawtell. *248
—Type-matrix engraving tools, Grinder for. *1044
—Valve grinder for Franklin auto. *660
—Valves, Premier auto. Grinding; automatic grinding machine made from old drill. *369
—Vertical grinder for plain and radius work, Alsacian. *1063
Guard, Buz-saw. J. E. Sweet. *76
Guard for box press. *27
Guards, Machinery, U. S. Steel Corp.'s. *331
Guide work by Am. Loco. Co. *1129
Gun-metal finish, Producing. *457
Gun requirements, British army. 694
Gun shop, Parker, steel test. *122
Gun testing, Neubabelsberg. *439
Guns, Grinding, French arsenal. H. Darbyshire. *728
Gyroscope of Bliss-Leavitt torpedo. *649, 961
Gyrostat, Principles and applications. H. B. McCabe. *482
E. M. Long, W. A. Knight. 787
Gyrostatic railroads. *980, *1135

H

Hack saw. See "Saw."
"Half Moon" and "Clermont." E. A. Dixie. *475
Hammer, Bench—Riveting comptometers. *488
Hammer, Claw, Mold, for. *149
Hammer, Compound pneu., Bliss. *41
Hammer, Drop, experiments. Y. Sekiguckl. *1125
Hammer, Drop, New, Erie. *635
Hammer, Steam, Early, Nasmyth's. *654
Hammers, Bearing-ball forging. *126
Hammers Steam—Bement notes. 220
Hammers Steam, Fixture. J. Cran. *197
Hammond typewriter shop tools. *353, *414
Handle, Screwdriver. R. W. Davis. *1004
Handling heavy work without cranes. 883
"Handy Man's Workshop and Laboratory." A. R. Bond. †1059
Hanger, Ball-bearing, Hess-Bright. *1157
Hanger, Universal-joint, Special tools for boring. M. Dawson. *261
Hangers, Clamping to I-beams. A. W. Wackerman. *876
Hardener, Benefits of science to. C. U. Scott. 701
Hardening. See also "Annealing."
Hardening alloy steels. J. A. Matthews. 82
(Comments on forging and hardening steel.) C. U. Scott. 338
Hardening and annealing. T. Du Pont. 440
Hardening and annealing furnaces, Continuous, for oil or gas, Rockwell. *510
Other Rockwell Furnaces. *776
Hardening and cooling speeds of steels. W. Osborne. 77
(Critical points.) M. Cowan. 252
(Quenching temperature.) C. U. Scott. 544
Hardening, Case, R. R. blacksmiths discuss. 533
Hardening compounds, Steel. C. U. Scott. 253
Hardening copper. W. Mor. 212
Hardening, Die, Davis'—Cause of breaking afterward. C. U. Scott. 170
Hardening die sections in lead bath. C. U. Scott. 466
Hardening—Drawing temper in emery. 1000
Hardening—Elec. heated oil tempering bath. General Elec. Co.'s. *802

PAGE

Hardening—Experiments with gases for carbonizing. Olsen and Weissenback. *156
Hardening flat steel with soap. T. R. Charlton. 348
Hardening furnace for lead and cyamide baths. U. S. Gas Furnace Co.'s *1018
Hardening furnace, Oil, Tate-Jones. *134
Hardening furnaces, American Gas. E. F. Lake. *455
Hardening high-speed steel, Method for. L. E. Stephens. 703
Hardening, Local. American Metal Treatment Co.'s *361
Hardening—Protecting furnace floors. M. Dogecla. 1096
Hardening room, Wiring work for. A. C. Lindholm. *1002
Hardening—Steel after quenching. M. Burmann. 294
Hardening steel balls. *128
Hardening steel by color, Difficulties in—Carbonized steel variously treated by American Metal Treatment Co. *348
Hardening—Temperature control instrument. Am. Gas Furnace Co.'s *1151
Hardening—Tempering records. H. L. Kohr. *708
Hardening—Use of Pyrometer. Coram. 339, 1006
W. H. D. 502
M. Dogecla. 588
G. S. String. 750
C. U. Scott. 1077
Hardness testing — Scleroscope in auto work. A. F. Shore. *982, *1029
Hardness and carbon contents of steel; the scleroscope. E. F. Lake. 210, 545
A. F. Shore. 505, 843
Hardness, Notes on tests for—Hardness of different metals by Turner's sclerometer, Shore's scleroscope, Brinnell's test and Keep's test; loss of quenching hardness on reheating, etc. T. Turner. *577
Hardness tester, Dynamograph. *349
Harvard Grad. School Applied Science. 922
Heat consumer, Variable speed. B. J. 81
Heaters, Oil-burning, Rockwell. *776
Heating greenhouses, Antique. *13
Heating plants, Shop, Notes on. W. H. Miller. 899
Entropy. 1143
Heating system, Nordberg foundry. *60
Hendey-Norton lathes, Building; inspecting. *225
—Planing lathe and miller parts. *325, *629
Hendrick, E. E., Death of. 884
Hexagon templet. J. Watt. *1095
Hight gage. See "Gage."
Hob-grinding attachment, Brown & Eberhardt. *963
Hob, Very large, B. & S. *42
Hobber, Gear, Lees-Bradner. *216
Hobber, Gear, Rhenania, Schutte's. *754
Hobber, Gear, Small. Schuchardt & Schutte's. *554
Hobbing double-helical gears. P. C. Day. *273, 468, *964
Hobbing process, Points in—Humpage hob. P. A. Thompson. 108
P. C. Day. 212
J. B. 630
W. G. Groocock. *671
(Difficulty overcome.) H. J. Eberhardt. *965
Hobbing 7-tooth ratchets. *811
Hoe, Robt., III., Death of. *632
Hoist, Chain, Duplex, Efficiency. J. A. Polson. *708
H. R. Towne. 840
Hoist, Electric, Rasmus. *717
Hoist, 40-ton, Yale & Towne *509
Hoisting—Lifting magnets. *219, *1046
Holder. See also "Tool." "Scale," "Reamer," "Oilstone," "Filing jig," "Press," "Die" (under screw), etc.
Holder, Blueprint-paper, Brown's. *925
Holding work, Useful methods, Prof. Sweet's. *154
Holes, Disk method for locating. *987
Holes, Locating, Model work. A. R. Lee. *1097
Holes, Small, Grinding with diamond laps. W. H. Ebelhare. *19
Holes, Square, Machining on press. C. J. Schaefer. *1098
Holes, Tapered, Producing in one operation. L. S. F. *744
Holes, Transfering. W. Whitley. 31
E. A. Dixie. *81
E. W. H. 170
Hollow mill. Pedro. *669
Holmes, A. B., Death of. 140
Hook, Crane, Flexible. W. B. Beebe. *887
Hooks, Crane, Strength. A. Rautenstrauch. *615, *1066
Con Wise. 919
E. J. Loring. *1065
Horsepower formulas, Charts for. *523

PAGE

Horton's machine-tool relics. *901
Hot, How, is fairly hot? J. Haithwaite. 672
A. F. Sutton. 1101
Hot-water heating. W. H. Miller. 900
Entropy. 1143
Hours, Daylight and working. Entropy. 542
Housings, Multiple, for large planers. J. T. Towlson. *903
A. A. B. 1143
Hudson-Fulton celebration. E. A. Dixie. *475
Fulton exhibit, etc. 554, 798
Hulls' steamboat. E. P. Buffet. *161
Hydraulagraph, American. *391
Hydraulic gages, Caligrating apparatus for, Watson-Stillman. *885
Hydraulic machines, Something new in—Beam shear; coping machine. Watson-Stillman Co.'s *299
Hydraulic press and sub-press, Burroughs. *885
Hydraulic press, Heavy, Burroughs. *848
Hydraulic pump, Small, Watson-Stillman. *1159

I

Idler Special. A. G. Scott. *744
Imagination, Constructive. W. H. Booth. 790
Improvements not always appreciated. W. Osborne. 367
Index plates, Proper, Cutting gears without. 887
Indexing device for notching work in punch press. E. Klaps. *121
Indexing, Emergency. Daniel F. Moriarty. 792
Indexing gage for Hammond typewriter shuttles; indexing and drilling jig . *353
Indexing papers. See "Filing."
India, Trade opportunities. M. de Moreira. 636
Indicating air-compressor discharge pipe. S. B. Redfield. *493
Indicator card, Gas-engine, formula. *527
Indicator for piston work. T. B. G. *209
Indicator, Test, Wolfe's. *90
Indicator, Thread-test, Remington shops. *936
Indicators, Ball-bearing test. *21
Indicators—Making Lanston Monotype. *115
"Induction Coils." A. F. Collins. †378
Industrial education. See "Education."
Industrial training, Notes and comments on. J. Vose. 916
S. M. H. 1144
Ingot molds, Machine-molded. E. H. Mumford. 484
Inspecting Hendey-Norton lathes. *225, *325, *629
Inspection, Bluff. J. R. Godfrey. 939
Inspection, Intelligent, Need of. 1012
Insurance, Accidents and. 946, 965, 973, 1058
G. M. Gillette's views. 883
J. R. Godfrey. 890
Insurance, Life, Savings-bank, Mass. 377, 752, 1105
Inventing. See also "Patent."
Inventing and patenting—A Will o' the Wisp. L. P. Alford. 221, 628
O. C. Knife. 545, 843
H. Johnson. 586
E. C. Smith. 587, 880, 1056
I. D. Kimball. 673
A. Pseudo-Inventor. 877
R. J. Hearne. 1144
"Inventions, Patents and Designs." G. C. Marks. †590, †845
Irish helper gets the best of the machinist. E. A. Dixie. 759
Iron, Cast, Brazing. J. M. May. 540
G. Tyro. *1131
Iron, Cast, Strength tests of. E. Adamson. 948
Iron, Cast, Swelling of. 987
Iron, Cast, test bars, Report. A. F. Nagle. *1088
Iron, Casting around brass. Clevelander. 422
Iron—Dynamograph tests. *349
Iron, Protecting with linseed oil. 224
Iron Trade Review, Daily. †549
Iron, Wrought, Distinguishing from steel. 1035
Ironwork. Art. E. A. Dixie. *231, 422, *584

J

Jack, Planer. M. F. Parsons. *55
Jacks, Lifting, Forged steel, Duff. *90
Japan, Progressive, and American conceit. 589
Japan, Trade. M. de Moreira. 388, 430
Japanese machinery imports. A. J. Wolfe. 72
Japanese patent law. 110
Japanning disks. C. Petitjean. *32
H. Smith. *750
Jerry Wise and perfect system. J. H. Vanplesenter. 808
Con Wise. 1057

PAGE

JIG.

—Bending jig, Simple. W. H. O. *875
—Boring bearing in drill press, jig for. M. E. Dawson. *986
—Boring large jig on miller, by E. A. Oakes. *413
—Boring on miller, by Fox Machine Co. *119
—Boring-tool holder, Jig, Adjustable. P. Campbell. *1049
—Boring tool. L. E. Salmon. *208
—Drill jig, Adjustable, Carlson's. *756
—Drill jig for washers. M. Goldberg. *286
—Dril jig, Self-centering. J. J. Harrington. *504
—Drill jigs, etc., Interesting types. Lanston Monotype Machine Co.'s —Quick acting clamps, etc. *69 *111
—Drilling and milling jig, Combined. W. J. Thompson. *1052
—Drilling work on Franklin auto. *658
—Filing jig, Lanston Monotype. *114
—Filing jigs for Colt pistol. *110
—Fixture for machining eccentric holes. *1050
—Indexing and drilling jig for Hammond typewritter work. *354
—Interesting jig—Rotating—Nutter's, of Carver Cotton Gin Co. *1118
—Jigs and fixtures, Making—Face plate fixture; boxing fixtures; locating studs; drilling jig. *913
—Laying-out tool. W. J. Kaup. *505
G. Hess. *840
—Sawing jig for miller. W. Alton. *27
—Self-centering jig for holding work in drill press. M. E. Dawson. *1050
Joint, Toggle. H. Terhune. *857
Joint, Universal, hanger, Special tools for boxing. M. Dawson. *261
Junk, Noise, foremen. Con Wise. 758

K

Kegelraeder, Herstellung. E. Linsel. †341
Kerosene vapor, Lubrication of clockwork by. R. W. Davis. 75
Key, Chuck, Design of. F. Reuter. *565
R. Charles. 841
E. A. Dixie, Reunos. *964
Keys, German. Artist Artisan. *542, 1055
Keying method, Gear. P. C. Day. *275, 468, *964
Keyseat-milling machine, Vertical, Newton. *511
Keyseats, Hand milling, Franklin auto. *659
Keyseater, Duplex. Chicago M. T. Co.'s *801
Keyseating machine, Lapointe. *175
Keyseating pulley. D. O. Barrett. 1041
Keyway-broaching fixture for cams. A. Dane. *417
Keyways, Cutting in axles, Holroyd milling machine for. *1159
"Knockoff" for shells. E. M. E. *1001
Knockout device. C. H. Brenton. *300

L

"La Demoiselle" aeroplane. *793, 844
(Speed—correction.) Railroader. 1020
Labor and wages, British. 916, 1144
Labor Statistics, N. Y., Report. †1013
Laboratory, Mfg., Neubabelsberg. H. Hess. *437, *1122
Lackawanna shops, Locomotive repairs. *946
Lacquering steel disks. H. Smith. *750
C. Petitjean. *32
Ladle heater, Gas-fired, Rockwell. *778
Lamp, Drawing-board. Link-Belt Co.'s. J. F. Schott. *86
Lamps, Incandescent, elec., Westinghouse, Making. *141
Lanston Monotype shop tools. *69, *111
Laps, Diamond, Grinding small holes with. W. H. Ebellfare. *19
Laps for putting fine edge on metal-cutting tools. J. O. Surface. 875
Lapping and grinding in Black Country. H. D. *745
Lapping micrometer anvils. F. J. B. *414
Latham's Antoinette monoplane. *608

LATHE.

See also "Tool," "Turning," etc.
—Alsacienne, Societe, de Constructions Mecaniques of Grafenstaden—24-inch engine lathe. *566
Heavy French lathe. *848
—Backing-off attachment. W. J. Kaup. *449
—Bed, Leveling up. J. E. Sweet. 468
—Bench-lathe heads, Boring fixtures for. F. W. B. *287
—Bevel-gear blank turning lathe, Bridgeford. *594
—Boring engine-lathe parts on adjustable multiple drill—Lead-screw supports; change-gear sweeps. A. Spangenberg. *626
—Boring gasolene-engine bosses. *1034
—Boring straight holes. B. Lansdown. *1004

PAGE

LATHE.

—Car-wheel lathe, Sellers. *40
—Centering small stock. W. Hebert. *707
—Chasers for Landis die heads, Making — Indicator attached for measuring cutter pitch. *313
—Chucking lathe, 10-spindle. *97
—Chucking work, Kempsmith. J. Goetz. *781
—Cincinnati lathe, 16-in. *1165
—Circular dividing, Accurate. G. C. Gay. *249
—Collet, Universal, Cleveland. *1016
—Combination machine tool. F. Bement's. E. A. Dixie. *1076
—Comptometers, Attachments for making—Gaging work; electric fan driving grinder. *488
—Controlling devices. Clevelander. *272, 630
—Cutting thread on slender work without steady rest. W. C. Baker. *913
—Deciding which lathe to buy for jobbing shop—Chip from McCabe double-spindle. J. Watt. *122
—Drivers, Two German, Dohringer. *634
—Engine lathe, New, with quick-change and planer feed boxes. *91
—Engine lathe, Notes on design of—Most for least money. Entropy. *363
York. *878
—"Engine Lathe Work." F. H. Colvin. †39
—Engine lathe, 50-in., Bement's. *1119
—Facing castings—Fixtures. H. Jonson. *374
—Grinding milling cutters. A. F. Kunze. *1032
—Heavy-duty lathes, LeBlond. *427
—Heavy plain turning lathe, Champion. *591
—Heavy 16-in. lathe, Milwaukee. *594
—Illustrations of progress. A. Turner. *330
—Jobs, Two awkward — Serrating brake drums; boring roll with crooked hole. F. J. Town. *347
—Leg design, Simple. Entropy. 169
—"Marvel" lathe, Lodge & Shipley. *215
—Monitor lathe, 16-in. universal, Dreses. *680
—Monitor lathe, 20-in. universal, Dreses. *923
—Motor-driven lathe, Davis. *260
—Precision lathe, Motor-drive, Rivett, on cabinet. *1015
—Operations in building and inspecting lathes—How Hendy Machine Co. planes, scrapes and tests beds, heads, saddles, etc. *225, *325
(Gages; rig for turning over large saddles, etc.) Entropy. *629
—Pattern shop—Dog; screw chuck; tool-rest stand; wrench. J. Brown *621
(Metal center.) H. Smith. *1007
—Pins, Forming, on lathe. D. S. Mann. *627
—Polishing and finishing lathe, F. E. Wells. *968
—Precision lathe, American Watch Tool Co.'s *678
—Pulley-crowning attachment. G. Heinemann. *460
—Shaft with conical boxes, Re-alinement of. J. E. Smith. 780
—Speed, Influence of, on cutting action when turning. H. S. Miller. *818
—Speed lathe, Substitute for turret for. E. A. Dixie. *876
—Spinning brass bowl; step bearing. *1149
—Spirals, Cutting in disks. Chips. *499
—Star lathe, New model, Seneca Falls. *381
—Star lathe, Motor drive for. *925
—Stops, Multiple, Lodge & Shipley, for engine lathe. *886
—Swings — Indicating capacity. Entropy. 583
—Tailstocks, Graduating. Entropy. 79
Tap cutting, Allowing for shrinkage. *1141
—Tapers, Acute, Turning. C. R. McGahey. *503
G. Cockle. *1053
—Thread cutting—Device to prevent throwing in half nut at wrong time. B. Lawrence. *253
—Turning gas-engine cams. G. H. Gibbs. *73
—Turret chuck, Indexing. R. Stephens. *285
—Turret lathe. See also "Screw machine" (under "Screw.")
—Turret lathe, etc., Acme. *90, *970
—Turret lathe, Automatic, Interesting job on—Door check. A. B. Mann. *746
—Turret lathe, Flat, Stud-releasing device for. W. Whitley. *543
—Turret lathe, Making shells in. A. B. Mann. *837
—Turret lathe, Stud extractor for. R. Stephens. *34
—Turret-lathe substitute for machining stuffing boxes. J. T. Crosley. *503
—Turret-lathe tools. C. R. McGahey. *362
—Turret-lathe work on Franklin auto. *660

PAGE

LATHE.

—Turret lathes reduce costs—Machining auto. valve. R. Croysdale. *373
—Turret machine, Automatic, Supporting devices for work. G. J. Jehle. *334
—Turret, Small tilted, Wood. *1061
—Turret, Types of. C. L. Goodrich. *737
—Worm and worm wheel, Cutting in lathe. *485
Laying-off centers. P. Campbell. *1004
Laying out work without buttons. *505, *840
Laziness, Proper place for. Con Wise. 1085
Lead bath, Hardening die sections in. C. U. Scott. 466
Legs, Machine. Entropy. 169
Leonardo da Vinci. E. P. Buffet. *731, *821 *868
Lester auto. screw machine. F. A. Stanley. *975
Lettering method, Easy. R. W. Davis. 912
Level, Precision, Izard-Warren "Sterling." *1018
Leveling up lathe bed. J. E. Sweet. 468
Lever, Button-head end of, Blanking and bending tool for. H. Harris. *625
Levers, Machine control and. Clevelander. *272, 630
Life insurance, Savings-bank, Mass. 377, 752, 1105
Lifting magnets. *219, *1046
Lightning-protection patents. J. D. K. 464
Limits for threaded work. P. H. Henning, F. C. Scribner *166, 467, *748 (Wells Bros.' limits.) 843
Lincoln millers, First. G. Makers. 291
Link-Belt Co.'s foundry practice. *622
Gift of ball-stud patent. *1011, 1012
Link making by Am. Loco. Co. *1128
Locating holes, Disk method for. *987
Locating holes, Model work. A. R. Lee. *1097
Lock, Turret — 10-spindle chucking lathe. *97
Lock, Nut. A. Lowry. *670, 918, *1146
Locking, Nut, device, de Bussierre. *847
Locking screws in place. Machinist. 785
Locksmithing, German, Fine. Artist Artisan. *542
A. F. Kunze. 1055
Locomotive driving boxes and tires, Carriers for; burnishing tool for axle journals. E. N. Owen. *462
Locomotive repairs, Lackawanna shops. 946
Locomotive shop, Modern—Am. Loco. Co.'s—Milling; grinding; making links and shackle-bar ends; guide work. F. H. Colvin. *1128
Locomotive work, Penn. shop. *1084
Logarithmic cross-section paper. *526
Lowell Machine Shop's Bement tools. *1119
Lubricant, Action on turning tool. A. H. A. 335
F. Haithwaite. 628
H. Jonson. 750
R. B. 789
W. H. Booth. 790
C. Deutsch. 1055
A. W. Adams. *1068
Lubricating gaso. engines. O. M. Flather. 339, 197
Lubricating system, Gravity cut, for shop. Conam. 625
Lubrication. J. R. Godfrey. 1019
Lubrication, Grease, tests, Cornell. *612
Lubrication, Machine; thick vs. thin oil, etc. W. H. Booth. 790
Lubrication of clockwork by kerosene vapor. R. W. Davis. 75

M

McGraw-Hill Book Co. 39
Machine control and levers. Clevelander. *272
T. A. Dicks. 630
"Machine Design," Kimball and Barr. †799
"Machine Design." W. C. Unwin. †966
Machine has taken away the job. *265
Machine operations, Analyzing with Westinghouse recording meter. A. G. Popcke. *851
Machine shop without cutting tools. *893
Machine slides. J. Richards. *806
Machine supports. Entropy. 169
Machine Tool Builders' convention. 711
Machine-tool capacity, Indicating. Entropy. 583
Machine tool, Combination. E. A. Dixie. *1076
"Machine tool," Definition wanted. 507
Machine-tool design, Nasmyth, Whit-
Machine-tool parts, Repair of, by oxy-acetylene torch. H. Cave. *434
Machine-tool performance, Published records. 921
Machine-tool wearing surfaces, Equal, Prof. Sweet's. W. Taylor. 582
Machine tools, Alsatian. *15, *566, *848, *1063, *1109
Machine Tools, American, Harder wearing surfaces for. 752

PAGE

Machine tools designed by Leonardo. E. P. Buffet. *821, *868
Machine tools—Increased prices impending? 675
Machine tools, Leaving them running. 78
Machine tools, Old—Reply to E. A. Dixie. G. Makers. *291
—Illustrations of progress. A. Turner. 330
—Bement's at Lowell Mach. Shop. *1119
—Auto. screw mach. H. E. Curtis. *406
Machine tools, Portable, Elec. driven, Allis-Chalmers shops. S. R. Stone. *695, *770
Machine tools, Rapid power traverse. 470
Machine tools, Swapping. R. E. Marks. 866
Machine tools, Tariff reduction. 423
Machine tools, Toy, Don't sell to trade school. E. H. Fish. 947
Machine tools, Two—A relic and original thread miller. W. J. Kaup. *901
Machinery. See "Trade," "Tariff."
Machinery elements, Standard, and a machine-rental plan. L. Tabor. 242
Machinist, Should he leave machine running while away? Entropy. 78
Machinists and engineers. W. D. Forbes. 433
W. G. Groocock. *842
Machinists, Creation of. E. P. Bullard, Jr. 711
"Made in Germany." J. Richards. 393
Magnets, Lifting, Handling rails by. Elec. Controller & Mfg. Co.'s. *219
Magnets, Lifting, Stockenholz. F. C. Perkins. *1046
Magnetism, Effect on strength. 93
"Maine," Power-speed chart for. *525
Man, A special. J. E. Sweet. 897
Man who knew it all. A. S. Atkinson. 203
Mandrel-driving machines, Some points on. J. Richards. *664
Mandrel for threading inserted blades for taps. T. A. Wallace. *913
Mandrels Expanding. J. T. Crosley. *419
W. F. Yeates. *882
Manganese bronze instead of forgings. 897
Manufacturers, Why they dislike college graduates. F. W. Taylor, W. Alton, Entropy. 640, 619, 937
"Manufacturing automatic," Interesting job on. A. B. Mann. *746
MASCHINENBAU. 548
Master-plate work—Ely-Norris safes. *893
Materials yard, Nordberg. *57
Mathematics and AMERICAN MACHINIST. G. Cormack, Jr. 172
Entropy. 419
Matrixes, Type, Making. 465
Measuring machine, Picard-Colomb. *1042
Mechanics being made. W. Osborne. *620
Melting of steel from interior. 124, *465
"Melting," Treasury Dept. definition. 887
Memorandum making, Ethics of. Graphic. 784
Memory, Treachery of. 1154
Men, Scarcity of. Superintendent. 952
Men with brains not wanted. J. Davis. 959
Merchants' & Mfrs.' Exchange Building, N. Y. Cy. 255
Merry Christmas. 1105
Metal articles, Method for repairing. *912
"Metal Spinning." F. D. Crawshaw. †752
Metal Trades Asso. branches. 799, 1154
Meter, Analyzing machine operations with, Westinghouse recording. A. G. Popcke. *851
Metric system, So easy to adopt; examples of confusion. *565
Metric system unwept, unhonored and unsung; A. S. C. E.'s report. 213, 254
Mexico, Trade. M. L. de Moreira. 35
Micrometer anvils, Lapping. *414
Micrometer calipers and depth gage.
Micrometer anvils, tapping. F. J. B. *414
J. Hubbard. *820
Micrometer, Electro. G. J. Murdock. *1025
Micrometer, Mercury, Picard & Colomb. *620
Micrometer, Quick adjusting, Costello. *717
Micrometer thimble, Slocomb; decimal equivalents. *635
Micrometer, thread-measuring device, Wells', etc. *292
R. K. Melvin. *709, 211
(Roller calipers.) M. E. Anderson. *665
L. D. Burlingame. 840
F. J. McDonald. *955
Micrometer, Thread, readings, Wheel chart for. L. A. Purcell. *1000
Microscopic laboratory, Neubabelsberg. *440
Mills, End and hollow. Pedro. *669
Mack. *964

MILLING.

See also "Cutter."
—Alsacian milling and drilling machine. *1109
—Alsacian vertical miller—Mechanisms for transmission, speeds, feeds; rotary and horizontal milling attachments; inserted-tooth cutter, etc. *15

PAGE

MILLING.

—Alsacian vertical miller with radius attachment. *568
—Am. Loco. Co.'s work. *1128
—Boring milling-machine columns, by Oesterlein Mach. Co. *447
—Collars, Arbor. G. J. Luck. *165
—Colt pistol, Making—Machines and operations; bridge milling; leaf fixture, etc. *95
—Cylinder, Pierce, Milling with nine cutters. *1150
—Die-milling machine, Bliss. *116
—Drill-press attachment, Rockford. *101
—Drill press, Milling attachment for, Hinckley. *634
—Drill, Upright, Milling attachment, Bliss. *717
—Drilling and milling machine, Knight. *259
—End mill, slabbing cutter, and hollow mill. Pedro. *669
Mack. *964
—Equalizing driver, M. B. Hill. *43
—Feeds, Belt. A. Herbert, Ltd. 80
—Fixture, Milling, for odd casting—Cabinet top. C. Nosrac. *958
—Fixtures, Milling, bending and testing, for Lanston monotype matrix-spacing bars, cam slots, etc. *111
—Form milling, Simple method. Brown Cotton Gin Co.'s. *1126
—Franklin autos., Milling engine case; cutting keyseats; rounding gear teeth. *657
—Gage for centering work with milling cutter. H. D. Chapman. *797
—Gear blank, Milling, on Schütte's Rhenania hobber. *754
—Gear, 48-in., Cutting on No. 3 milling machine. O. D. Tuttle. *963
—Hand miller, Chicago "Duplex," Impvts. — Vertical attachment; overhanging arm. *256
—Hand milling tools. J. M. May. 540
—Jigs, Drilling and milling, Combined. W. J. Thompson. *1052
—Jigs, Boring on miller. *119, 413
—Keyseat-milling machine, Vertical, Newton. *511
—Keyways in axles, Holroyd milling machine for cutting. *1159
—Lincoln millers, etc., Old. *291
—Milling and boring machine, Beaman & Smith. *1158
—Milling attachment, Portable shaper. *771
—Milling, boring and drilling machine, Horizontal, Fosdick. *848
—Milling, drilling and boring machine, Horizontal, Newton. *552
—Milling machine, Large special, Schiess, for milling grooves in cylindrical castings, etc. *1018
—Milling machine, New, Becker. *1014
—Removing 18 cubic inches a minute on B. & S. Miller. 136
—Sawing jig. W. Alton. *27
—Smith Premier factory—Milling spiral ratchets; special machine for milling slots in curved guide. *811, *817
—Tongs, Taper socket, Milling fixture. S. R. C. *1142
—Thread miller, The original, W. J. Kaup. Pratt & Whitney. *901
—Thread milling. F. C. Scribner. *292
—Thread-milling scheme. A. L. Sparks. *583
—Turret, Milling-Machine, Funk Mach. Co.'s. *998
—Turret Milling-machine, Time saver for. J. H. Johnson. *958
—Twist-drill milling machine, Biernatzki's. *427
—Typewriters, Remington, Making—4-spindle miller; fixture for holding carriage frames; facing and forming job; 2-spindle milling attachment; tap-fluting fixture; fixture for top rail. *931
—Universal milling attachment, Substantial, Kearney & Trecker Co.'s. *755
—Worm and gear cutter, Schütte. *800
—9-spindle milling machine, Beaman & Smith. *923
Model vs. sketch. J. C. A. 371
Model work, Locating holes. A. R. Lee. *1097
Mold for rubber typewriter shuttle. *353
Molding. See "Foundry."
Monoplane, Antionette, Details. A. Post. *108
Monoplane, Blériot, that flew channel. *383
Monorail car, Brennan. *980
Monorail road, Scherl. W. Kübler. *1135
Monotype, Lanston, Making. *69, *111
Mortising, Graduated-stroke. J. Richards. *637
Motor. See "Electric," "Automobile," "Aeroplane," "Engine," "Vacuum," "Wave," etc.
Mowing-machine drive. M. H. Ball. *501
Multiple-voltage system, Ward-Leonard. *699
Municipal mfr. of gate valves. *774

PAGE

N

Name plates, Making. R. Brown. *841
Nasmyth machine tools, Early. *654
National Civic Federation meeting. 973
National Mach. Tool Builders' convention. 711
Natl. Met. Tr. Asso. branches. 799, 1154
Navy tool-steel specifications. H. Williams. 187
—Editorial. 631
Neubabelsberg laboratory. H. Hess. *437, *1122
New York Labor Statistics. †1013
New York, Pneumatic postal tubes. *761
Niagara power, Relative cost. 897
Nickel steels. J. A. Matthews. 82
Noise and friction. 674
A. M. Wachter. 920
Noise, junk, foremen. Con Wise. 758
Nonmagnetic ship "Carnegie." E. A. Dixie. *356
Nordberg foundry and storage. *56
Notching taps. W. G. Groocock. *333
Notching work in punch press, Indexing device for. E. Klaps. *121
Notes abroad—Building aeroplane motor. Parisian. *817
Nozzle, Sand-blast, Macleod "Buckeye." *174
Nurling tool, Bench-lathe. B. L. *1140
Nurling tool, Turret. J. Bailey. *110
Nut lock. A. Lowry. *670, *1146
F. A. Strauss. 918
Nut-locking device, French, de Bussierre. *847

O

Octagon inscribed in square, Dividers to find side of. G. Lisle. *522
Odors, Commercial effect. W. Osborne. 856
E. A. Dixie. 1055
Oil acidity test. 197
Oil-burning furnaces, forges and heaters, Rockwell. *510, *776
Oil-country echoes. W. Osborne (with discussion.)—Hardening and cooling speeds of steels; critical points. 77, 252, 544
—Variable-speed invention. 81, 377
—High-speed steel, Sammy's shop. 145, 468, 749
—Improvements unappreciated—Valve repair. 367
—Looking for bossing job. 393
—Figuring centrifugal-pump power. *491
—Mechanics being made. 569
—Why Sammy keeps belt records. 643
—Commercial effect of odors. 856, 1055
—Entropy's labor-paying system. 917, 1145
Oil cup, indestructible, U. S. Met. Packing Co.'s. *635
Oil-drum nozzles, Press tools for wiring and flanging. W. G. Groocock. *497
Oil furnace. See also "Furnace," "Hardening, etc.
Oil holes in aeroplane crankshaft, Plugging. *817
Oil separator, Oesterlein Mach. Co.'s. *447
Oil tempering bath, Electrically heated, Genl. Elec. Co.'s. *802
Oil-well casing, Making "under reamers" for. C. Ashley. *452
Oilstone holder. A. Neilsen. *585
Old machine tools—Reply to E. A. Dixie. G. Makers. *291
A. Turner. *330
H. E. Curtis. *406
Nasmyth, Whitworth, etc., tools. *654
W. J. Kaup. *901
(Leonardo's.) E. P. Buffet. *821, *868
Old masters, Work of. R. H. Victory, J. Richards. *1119, *1121
One-man shop. C. A. C. 336
"Only men now employed need apply." G. P. Pearce. 203
Opening of new epoch. 469
Opportunity every boy has in shop. 423
Outboard support on rack cutter. E. A. Dixie. *336
Outliner, Casting. E. J. Wilson. *76
Oxhydric steel-cutting process, Emergency use for removing wreckage. E. F. Lake. *910
Oxy-acetylene. See also "Welding."
Oxy-acetylene torch. W. I. Reich. *1147
Oxy-acetylene torch, Repair of machine-tool parts by. H. Cave. *434
Oxy-acetylene welding, Development. H. Cave. *521
Oxy-carbi Co.'s welding processes. *988

P

Pabst brewery explosion wreckage removal. *910
Packing and wrapping machine. S. B. R. *1132
Panama, a machine-made canal. *103
Paper, Drawing, Fastening and backing up. H. R. Ash. *88
Paraguay, Trade. 87
Parker Bros.' steel test. *122
Patent, A valuable. J. D. K. 464
Patent appeal, Court of; American Bar Asso. report. E. J. Stoddard. 580
Patent, Giving it to the people—Santos-Dumont aeroplane. 844, *793, 1020
—Link Belt Co.'s ball expansion stud drive. *1011, 1012
Patent laws, Our. E. J. Stoddard. 206
Patent-medicine tactics, Engineering monthly. 1106
Patent-revocation procedure, British. 93
Patent system, Suggested change. P. I. 211
Patents, Commercial value. O. C. Knipe. 545
A Pseudo-inventor. 877
Patents, Inventions, Designs, New British Act. G. C. Marks. †590, †845
Patents, U. S., Classification. 1160
(Cost and value of U. S. patents.) O. C. Knipe. 843
R. J. Hearne. 1144
Patenting and inventing—A Will o' the Wisp—Census of experiences. L. P. Alford. 221, 628
H. Johnson. 586
E. C. Smith. 587, 880, 1056
I. D. Kimball. 673
Pattern and rigging for molding worm screws. M. E. Dawson. *596
Pattern, Collapsible, for cone pulleys. C. Nosrac. *329
Patterns, Plate-pulley. A. Hearn. *706
Pattern-shop appliances—Dog for split pattern; screw chuck; tool-rest stand; wrench. J. Brown. *621
H. Smith. *1007
Patterns—Non-shrinking alloy. 705
Patterns, Pipe, for single castings—Converting tee to ell, etc. W. Peters. *404
R. Faite. *1054
Patternmakers' clamp for segments. D. Brown. *626
Patternmakers' hex. templet. J. Watt. *1095
Patternmakers' sanding machine, Benn's. *258
Patternmakers' varnish pot. J. Watt. *1027
Pawls, Silent, Types. R. W. Davis. *890
K. P. Ralston. *1102
F. S. Williams. *1144
Paying for labor, Entropy system. Entropy. 492, 1145
W. Osborne. 917
T. H. N., C. H. Smith. 962
Pedagogical view of trade training, Fallacy of. Instructor. 443
Pensions, Old-age, in England. 973
Perks, A. J., Death of. *716
Peru, Trade. W. de Moriera. 177
Phila. Gear Wks.' gas producer. *153, 672
Phœnix Iron Wks., tools discussed. *291
Piano player, Baldwin—Vacuum motor. *992
Piece work. J. R. Godfrey. 190
Piece work; machine rental. L. Tabor. 242
Pierce Shops, Cylinder work in. *1150
Pin, Accurate, Making. A. J. Jones. *838
Don Carlos Auton. *1146
Pin, Piston, Ideal. H. L. Arnold. *366
Pins, Forming, by extrusion process. *1073
Pins, Forming, on lathe. D. S. Mann. *627
Pipe centers. H. Pearman. *468
H. T. Clark. *917
A. B. *1006
Pipe cutter, Rethreading 1¾-in. U. S. thread with. Old Timer. 458
Pipe-cutting machine, Duplex, Bignall & Keeler. *380
Pipe-cutting machine, Ryerson. *1109
Pipe patterns for single castings—Converting tee to ell, etc. W. Peters. *404
R. Faite. *1054
Pipe, Permanent molds for. *150
Pipe sizes, Hydraulic, without mathematics—Chart. W. R. Clark. *60
Pipe threading, Modern machines for—Standard-Wieland, Crane, Merrell, Bignall & Keeler and Toledo. J. F. Springer. *831
Pipes, Know where they are. 715
Piping, Antique, Boring. E. P. Buffet. *12
"Piping Systems, Steam Power plant." W. Morris. †255
Pistol, Colt auto., Making. F. H. C. *95
Piston and ring work, Franklin auto. *659
Piston pin, Ideal. H. L. Arnold. *366
Piston rings, Buffalo Gaso. Eng., Making. *1035
Piston rings, Eccentric, Mfr. of. C. T. Schaefer. *207
Piston-rod design. Instructor. 33
Piston-work indicator. T. B. G. *209
Pistons, Auto., Grinding. A. W. Rittey. *27
Pistons, Auto., Finishing. Cartercar and American Simplex. H. Dolnar. *7, *52
Pistons, What they endure. Superintendent. 956
Planer, Adjustible bolt for, Red Wing. *757
Planer bed, Duplicating, Cincinnati, for P. R. R. *324
Planer belt-drive change. G. H. Handley. 32
Entropy. 78
A. A. Ball Jr. *81
H. Maplethorpe. 169
Anthony. 421
Planer brace. M. F. Parsons. *55
Planer drive, Two-speed, Cincinnati. *345
Planer drive, 3-speed, Cincinnati, built for Heald Grinding Co. *889
Planer, Dynamograph tests on. *349
Planer, French, with ways of peculiar angles, Lomont & Hurtu. *298
Thomas Shanks & Co. *751
Planer friction, Repair on. S. V. B. *959
Planer job on shaper. C. E. Holgate. *288
Planer kink—Use as shaper. J. B. Chipman. *725
Planer, Large job on small—Gate valve. W. S. Sherman. *9
Planer, Metal, Small, Schneider. *1064
Planer, Powell accelerating-cut. *116
Planer, Rockford, New. *381
Planer, Rotary, portable, Newton. *697
Planer, Small, Nasmyth, with novel reverse. *655
Planer, Tool for parting pieces on. J. T. Towlson. *1051
Planer ways, Variety of. C. A. Heald. *693
Planer with variable-speed drive, Alsatian, Grafenstaden. *509
Planers, Large, Multiple housings for. J. T. Towlson. *903
A. A. B. 1143
Planers, Roller belt shippers on. H. E. Potter. 492
Planimeter-operation principles. M. R. Wells. *691
Planing arcs. J. R. Baker. *875
Planing, Crank, machine, Newton. *1063
Planing fixture for sensitive radial drill arms discussed. J. Crosby. *251
Planing in machine-tool shop, Hendey—Lathe beds, headstocks and saddles; Lincoln miller parts; use of Gray and Chandler planers, etc. *225, *325
Entropy. *629
Planing job on boring mill—Split pulley. J. Van Pelt. *1067
Planing machines, Vertical, Are we neglecting? Sharp, Stewart & Co.'s Scotch planer. A. Robertson. *243
Plates, Rectangular, Supported at edges, Strength of. A. L. Pratt, Con Wise. 124
(Table of formulas.) Messner. *918
Pliers, Riveting, Toggle. C. Carson. *585
Plows, Early. E. P. Buffet. 117
Pneumatic. See also "Air," etc.
Pneumatic postal tubes, Underground. R. S. Bayard. *761
Podunk Smythers. A. S. Atkinson. 203
Pole, Electric-light, base, Facing. *374
Polishing and finishing lathe. F. E. Wells. *968
Pope, Col. A. A., Death of. 341
Portable tools, Electrically driven, Allis-Chalmers shops. S. R. Stone. *695, *770
Postal tubes, Pneumatic. R. S. Bayard. *761
Power drive, Curious. Du Pont. *486
H. O. Allen. 842
A. M. B. 1056
Power-efficiency comparison of two B. & S. auto. screw machines. *18
Power plant, Machine-shop, Smallest. J. C. Wilson & Co.'s. E. F. Lake. *725
Power—Use of recording meter. *851
Premier shops, Features. F. H. C. *369
Premium plan. Double-rate. H. F. MacLane. 158
Premium plan; machine rental. L. Tabor. 242
Premium system, English—Chart. C. V. Raper. *838
Premium system in jobbing shop; limits for varying number of machines. D. Eheisellen. 32
T. A. Sperry. 251
Premium system of wage payment; use at Wagner Elec. plant. C. B. Lord. 200

PRESS.

—Automobile work, Large Toledo presses for. *1107
—Beam, Press, Strengthening. C. L. S. *1098
—Blanking and bending tool for button-head end of lever. H. Harris. *625
—Blanking and piercing tools, Making set of. H. Harris. *480
G. E. Gay. 1007
—Blanking tools, Sectional, for electrical work. E. Klaps. *247
—Brick press, Large automatic. H. F. Atkins. *689
—Comptometers, Presses and dies for. *487
—Crank press, Double, Bliss. *509
—Die, Davis', Cause of breaking after hardening. C. U. Scott. 170
—Die drawing and folding, for shade rollers. V. & O. Press Co.'s. W. J. Kaup. *1130
—Die for typewriter shuttle. *353
—Die-milling machine, Bliss. *116
—Die repairs—Scale attachments. T. H. N. *1048
—Die sections, Hardening in lead bath. C. U. Scott. 466

PAGE

PRESS.

—Die, Sectional, for subpress—Blanking and piercing small aluminum parts. A. M. Cahill. *402
—Die, Sub-press, with 91 punches, at Smith-Premier factory. *817
—Dies, Engraving by Keller automatic machinery. S. B. Redfield. *535
—Dies for forming tubes. A. B. Card. *839
E. Verd. 1055
P. P. Monfils. *1099
—Dies, Progressive drawing, piercing and blanking. F. C. Mason. *120
—Double-acting press, Diagram of crankshaft and tool positions on. J. J. Densman. *224
—Double-crank press, Special, Bliss. *297
—Drop-press experiments. Y. Sekigucki. *1125
—Ferracute press, New, Large. *593
—Fixture for machining square holes. *1098
—Forging cutters for O. K. tool holders. *179
—Hand press, Simple, for assembling cash-register keys. M. F. Bates. *027
—Hydraulagraph, American. *391
—Hydraulic press and sub-press, Burroughs. *885
—Hydraulic press, Heavy, Burroughs. *848
—"Knockoff" for shells. E. M. E. *1001
—Oil-drum nozzles, Press tools for wiring and flanging. W. G. Groocock. *497
—Perforating punch and die, Automatic. C. Eisler. *498
—Pneumatic press, Impvd., Springfield. *969
—Power press, Bench, Atlas. *1015
—Press-tool standards—Tables of die-holder and block sizes. *371
—Pressing work together, Handy way, Providence Engineering Wks. *1160
—Printing press. See "Printing."
—Punch and die construction, Automatic—Making bottle cap by V. & O. Press Co. W. J. Kaup. *1086
—Punch and die, Forming and assembling, for Hammond typewriter card-holder leaf. J. P. Quinn. *414
—Punch-press guides. W. Taylor. 582
—Punch press, Indexing device for notching work in. E. Klaps. *121
—Punch press, making cabinet drawer pulls. *957
—Punch-press shaft, Built-up, made in 1834. A. Tiptonian. *1139
—Punch press, Slotting die blank in. R. E. Roberts. 207
—Punches and dies, Large sectional, for straight-toothed and other blanks. Nestor Mfg. Co.'s. *1036
—Punching fiber. M. Dale. *915
—Safe press, Queen City. *382
—Safety device for paper-box press. R. H. Davis. *27
—Safety device for punch presses. C. Carson. *875
—Shears for spring steel. C. E. Martindale. *335
—Shearing blanks. H. Harris. *1052
—Single-action, 164,000-lb. press, Bliss. *1158
—Spring pressure device and knockout. C. H. Brenton. *300
—Staples, Tools for. W. L. Fuller. *459
—Stock stop for press tools. V. E. Walters. *1003
—Stroke adapter for power press. H. Harris. *959
—To produce tapered holes of strainer in one operation. L. S. F. *744
J. E. Sweet, W. B. Greenleaf, C. Eisler. *1005
—Tool orf turning flanges. W. G. Groocock. *972
—Tools for Connecticut computing-machine parts. F. A. Stanley. *1171
—Tools for escapement wheels, Remington typewriter shops. *935
—Tubes, Shelby seamless, Making. *599
—Wheel press, Elec. hydraulic. Western Elec. Co.'s. *846
—Wheel press large, Gardner. *924
Pressure control, Hydraulic. Oxy-Carbi Co.'s. *988
Pressure — Cutting tests — Dynamograph. *349
Printing-office devices, Removable—Automatic feeders; assembling and stitching AMERICAN MACHINIST; book sewing, etc. S. B. Redfield. *1
Printing-press type-cylinder gears. *55
Problem in stresses. I. G. Norman. 749
S. M. Woodward, J. S. Meyers. 1053
Probst gears. G. E. Quick. *323
Producer, Gas. See "Gas," "Engine."
Profiling machine. Am. Watch Tool Co.'s. *679
Profiling machine, Double, Colt. *96
Projectile studies, Neubabelsberg. *440
Prony brake, Compensating. *178
Protractor and square, Kelsey. *847
Protractor, Attachment to Starrett, for file-teeth angles. E. Herbert. *271, 642
Protractor, Bevel, Improved, Starrett. *1064
Pulley-crowning attachment. G. Heinemann. *460
Pulley, Keyseating. D. O. Barrett. 1041
Pulley, Loose, Self-oiling, "Maymont." McMaster-Carr Supply Co.'s. *342
Pulley, Parapneumatic. E. A. Dixie. *336
Pulley, Plate, Pattern for. A. Hearn. *706
Pulley repair. S. H. Ralston. *670, 962
Pulley, Split, planing on boring mill. J. Van Pelt. *1067
Pulleys, Cone, Collapsible pattern and molding machine for. C. Nosrac. *329
Pulleys, Crowning. G. W. 211
Pulleys—Rope drives. E. Kenyon. *61
Pulleys, Tight and loose. R. D. Dickinson. *751
Pulleys, etc., C. M. Wheaton's—Method of hanging shafting in high room; pulley with internal clutch; friction-cone drive from main line shaft; novel loose pulley. *342
Pump, Centrifugal, Can power used be figured from water delivered? W. Osborne. *491
Pump, Circulating, Aeroplane motor. *817
Pump, Hydraulic, Small, Watson-Stillman. *1159
Pump, Old quadruplex, Holland's. *12
Pump repair, Emergency. Gymnite. *956
Pumps, Steam, Automatic suction pipe condenser for. G. Rennerfelt. *180
Punch. See also "Press."
Punch and shear, Combined, Covington. *757
Punch and shear, German, Honer's. *260
Punch, Center. Cy. Press. *1142
Punch, Multiple, and shear, Bertsch. *353
Punch, Templet, Bonvillain-Ronceray. *293
Punch or horizontal slotter, Colt. *98
Punches, Steel, Machine vs. hand work on. T. H. Kimber. 251
C. A. Coppack. *34
Punching fiber. M. Dale. *915
Punching tapered holes. L. S. F. *744
J. E. Sweet, W. B. Greenleaf, C. Eisler. *1005
Putty grinder. R. A. Anderson. *747
Pyrometer, Elec. recording, Brown. *92
Pyrometers, Use and calibration. "Corum." 339, 1006
W. H. D. 502
(Why discarded? checking with cones, etc.) M. Dogecla. 588
C. U. Scott. 1077
(Testing.) G. S. String. 750

Q

Quench tool steels, Temperature at which to. C. U. Scott. 544, 77, 252

R

Rack cutter, Outboard support. *336
Radial truing device, Norton grinder. *729
Radius and center finder. T. S. Quay. *481
J. E. Sweet. 841
Rails, Bonding. H. Cave. *522
Rails, Handling by magnets. Elec. Controller & Mfg. Co.'s. *219
Railroad blacksmiths on case hardening. 533
Railroad-car unloaders. 309, *490, *877
Railroad protection, Automatic—Switches and signals. S. B. Redfield. *278
J. O. Smith. 337
H. Jonson. 465
Railroad shop, Penn., jobs, Two. *1084
Railroad shop practice, for Lackawanna. *946
Ratchet device for miller turret. *958
Ratchet pawls, Types. R. W. Davis. *890
K. P. Rolston. *1102
F. S. Williams. *1144
Ratchets, 7-tooth spiral, Hobbing, at Smith-Premier factory. *811
Rate-setting plan. L. Tabor. 242
Razor, straight-edge made from. 372
Reamer and boring tool, Cleveland. *135
Reamer, Adjustable. J. Watson. *1097
Reamer, Ball-adjustable, Loewe. *1064
Reamer cut large, Making. O. Johnson. 165
Reamer holder, Floating, for vertical mills, Colburn. *969
Reamer, Inserted-blade, dimensions. J. R. Weaner. *707
Reamers, Taper-pin, Cleveland. 1062
Reamers, Under, for oil-well casing, Making. Union Tool Co.'s. C. Ashley. *452
Reaming and tapping machine, Special 3-head, Niles-Bement-Pond. *520
Records, Tool performance, Published. 921
Red-lead putty grinder. R. A. Anderson. *747
Relieving attachment. W. J. Kaup. *449
Relieving device. M. H. Ball. *241
Remington typewriter, Tools for making. *931
Rental, Machine, plan. L. Tabor. 242
Repair, Neat and efficient, for metal articles. C. C. Klein. *912
Repair table, Pneu. W. H. Snyder. *413
Reputation, Good, and good work. E. A. Dixie. 898
Resistance grids, Molding. S. Jones. *146
Rest, Tool, stand, Patternmakers'. *621
Reverse, Friction, Automatic, made by Phila. Gear Wks.' for P. E. Clark. W. J. Kaup. *387
Revolution-counter timer, Weiss. *801
Rheims, Aeroplane at. A. Post. *515
Ribbon, Metal, casting. 88
Rice 2-cycle double-acting gas engine. H. Greene. *721
Rifle requirements, British army. 694
Rifling Colt pistol. F. H. C. *98
Right to be, The. 139
Rings, Rolling, Fixture. W. Le Dierp. *36
Rivet-spinning machine, Grant. *512
Riveters, Pneumatic jam. W. T. Sears. *441
Riveting comptometers—Bench hammer. *448
Riveting job, Tube, on sensitive drill press. Jack Jnr. *1096
Riveting pliers, Toggle. C. Carson. *585
Riveting tool, Ferrule. A. M. Jones. *407
Riveting typewriter-ribbon spools. G. Wulfruna. *375
Robbins & Lawrence tools. *291
Roll with crooked hole, Boring. F. J. Town. *347
Rolls, Rubber, platen, Grinding. *817
Roller calipers. M. E. Anderson. *665
Rollers, Bearing, Grinding. H. Darbyshire. *728
Rolling auto. tires. *191
Rolling machine for angle plates at Smith-Premier factory. *812
Rolling mill, Am. Steel & Wire Co.'s. *1115
Rolling rings, Fixture. W. Le Dierp. *36
Rolling Shelby seamless tubes. *600
Rolling tool for driving-axle journals. E. N. Owen. *463
"Roof Trusses, Table of Stresses in. Clayton and Craig. †424
Rope-making machinery. *395
Ropes, Transmission of power by. E. Kenyon. *61
Ropes, Wire and other, Splicing. J. Watt. *1008
Rubber platen rolls, Grinding. *817
Rubber tires, Auto. Making. *191
Rules, Errors in. G. G. Gload. 186
Running-balance machine, Norton. *1023
Running fits. W. Sangster. *75
G. H. Handley. 293
Rust preventer, Vatudrip. 136

S

Safe press, Queen City. 382
Safe, Ely Norris, Blowing open. *888
—Processes of manufacture. *893
Safeguards on rapid acting machinery—Paper-box press. R. H. Davis. *27
Safety appliances. W. H. Tolman. 714
Safety appliances, Providing and using. 295
Safety device for punch presses. C. Carson. *875
Safety devices, Shop. Entropy. 78
Safety devices, U. S. Steel Corp.'s. *331
Safety factors, Air-ship design. 715
Safety guard, Buz-saw. J. E. Sweet. *76
Sammy's shop. W. Osborne. 145, 468, 643, 749
Sand-blast nozzle, Macleod "Buckeye." *174
Sand mixer and sifter, Bilz. *217
Sanding machine, Patternmakers', Benn's. *258
Santos Dumont's "La Demoiselle." *793, 844, 1020
Saw, Bench cutting-off, Taylor-Schantz. *550
Saw, Buz, safety guard. J. E. Sweet. *76
Saw chips on both sides. 889
Saw, Cold cutting-off, Gorton. *591
Saw, Hack, Racine motor-driven. *753
Saw, Hack, using full blade, "Victor." Mass. Saw Wks.'. *971
Saw, Hot, as cut-off machine. M. C. Conan. 294
Saw, Power hack, Gage for. Wulfuna. *670
Saw, Cold, "Rapid." Wagner's. *296
Saws, Slitting, Adjusting to prevent breakage. L. W. Charles. 290
Saws, Thin slitting, Difficulty with. A. Kfrkland. 219
R. E. Roberts. 506
E. Mee. 787
Sawing jig for miller. W. Alton. *27
Sawing thin brass tubing in hack saw. P. J. A. 875
J. A. Raught. 1146
Scale-cutting machine, Remington shops. *932
Scale Draftsman's, Convertible. E. J. Lawrence. *1142
Scale holder for surface table. Stanley. *165
Scales, Errors in. G. G. Gload. 186
Scales, Steel, Attachments. T. H. N. *1048
Scherl monorail road. W. Kübler. *1135
School. See "Education."
Science, Benefits to hardener. C. U. Scott. 701
Science of selling abroad. A. J. Wolfe. 638
Scissors, Making handy tools from. 974
Sclerometer, Turner's. 578
Scleroscope in auto. work. A. F. Shore. *982, *1029

PAGE

Scleroscope and hardness. A. F. Shore, E. F. Lake, T. Turner. 210, 505, 545, 578, 843
Scraping Hendley-Norton lathes; scraping fixture for headstocks, *226, *228, *629

SCREW.

See also "Worm," "Tap."
—Chart for weight of stock for small screws. O. F. Nilsson. *952
—Die adjustment Smart. *635
—Die heads, Landis, Making chasers for. *313
—Die holder, Releasing, Wells Bros'. *757
—Die, Self-opening. E. Zetterman. *1094
—Die sharpener, National. *969, 1062
—Flat-head screws, Triangle for laying out. W. G. Young. *373
—Locking screws in place. Machinist. 785
—Screw machine, Automatic, Wollstein. *552
—Screw, Machine, computer. W. J. Warner. *123
—Screw machine. See also "Lathe," (sub-entry "Turret.")
—Screw machine, Acme. *970
—Screw machine, Acme auto., Slabbing in. *90
—Screw-machine and punch-press job, Combination. *1075
—Screw machine, Auto., Infancy of. H. E. Curtis. *406
—Screw machine, Auto., Making small stud in. P. W. Abbott. 171
—Screw machine, Auto., slotting attachment for. C. Nosrac. *512
—Screw machine, B. & S. auto., Drilling attachment at Smith-Premier factory. *813
—Screw machine, Auto., Lester. F. A. Stanley. *975
—Screw machine, Multiple-spindle automatic, Peerless. *44
—Screw machine, Motor-driven, Wells. *595
—Screw-machine turret slides. W. Taylor. 582
—Screw-machine wire feed, Wells. *924
—Screw machine, Wood Tilted Turret, Improvements—Roller feed, etc. *43
—Screw machines, Automatic, B. & S., No. 2 and 2-G, Comparison of power efficiency. *18
Screw machines, Types of turret for. C. L. Goodrich. *737
—Screw machines, Using square and hexagon stock in. J. O. Surface. *915
—Screw-polishing machine, Remington shop. *935
—Screwdriver handle. R. W. Davis. *1004
—Screwdriver, Magazine, power, Reynolds. *1016
—Screwdriver, Substantial, Lynn. *297
—Thread cutting on slender work without steady rest. W. C. Baker. *913
—Thread-cutting tools, Making. A. R. White. *928
—Thread gages, Device for measuring. A. T. Sutton. *784
—Thread gages for screw-machine work. F. L. Gager. *745
—Thread-micrometer readings, Wheel chart for. L. A. Purcell. *1000
—Thread miller, The original, Pratt & Whitney, W. J. Kaup. *901
—Thread-milling scheme—cutting slow leads. A. L. Sparks. 583
—Thread-rolling dies. F. C. Scribner. *169
Daniel F. Moriarty. 546
—Thread-test indicator and tool grinding and gaging fixtures, Remington shops. *936
—Thread, 1¾-in. U. S., Rethreading with pipe cutter. Old Timer. 458
—Threads, Helps in cutting; to prevent throwing in half nut at wrong time. B. Lawrence. *253
—Threads, Screw, Measuring. *955
—Threads, Screw—Should they have a 60-deg. angle at right angles to helix? — Tables; measuring devices, etc. R. K. Melvin. *211, *709
(Thread millers; threading gages; Wells Bros'. micrometer measuring device, etc.) F. C. Scribner. *292
Wilfred Lewis. *628
(Device for measuring threads—Browne's roller caliper for White Dental Mfg. Co.) M. E. Anderson. *605
L. D. Burlingame. 840
—Threaded work, Limits. P. H. Henning; F. C. Scribner. *166, 467, *748
(Wells Bros.' limits.) 843
—Threading disk for Ely-Norris safe. *895
—Threading inserted blades for taps, Mandrel for. T. A. Wallace. *913
—Threading, Pipe, Modern machines for —Standard Wieland, Crane, Merrell, Bignall & Keeler and Toledo. J. F. Springer. *831
—Threading, Simultaneous internal and external. Cy. Press. *915
—Threading studs in boiler washout doors. R. Brown. *539

PAGE

SCREW.

—Threading-tool holder, Spring, Flannery's. *576
—Threading tools, Internal. A. K. Guild. *417
H. Chinn. *881
Scriber, Transferring. E. A. Dixie. *81
Secrecy in shops. E. A. Dixie. 993
Sectional punches and dies, Large, Nestor. *1036
Selling abroad, Science of. A. J. Wolfe. 638
Shackle-bar ends, Making. *1129
Shade rollers, Making. W. J. Kaup. *1130
Shaft. See also "Crankshaft."
Shaft-boring job. M. J. W. *838, *1100, *1101
Shaft, Lathe, with conical boxes, Realinement of. J. E. Sweet. 780
Shaft, Line, efficiency. H. Hess. 1064
Shaft, Press, Built-up. A. Tiptonian. *1139
Shafts, Spanner wrench for. I. Cramp. *208
Shafts, Special, Grinding. H. Darbyshire. *728
Shafting, Drum, Colt Armory *95
Shafting hanger, Ball-bearing, Hess-Bright. *1157
Shafting, Method of hanging in high room; pulley with internal clutch; friction-cone drive from main line shaft; novel loose pulley. C. M. Wheaton's. *342
Shafting, Universal ball bearing for. United Bearings Co.'s. *379
Shaper, Gould & Eberhardt, Blue Chip steel tests in. *115
Shaper, Nasmyth, Old. *656
Shaper, Planer job on. C. E. Holgate. *288
Shaper, Planer used as. J. B. Chipman. *725
Shaper rig for machining concave table. T. H. May. *46
Shaper, Small motor-driven, Rhodes. *1015
Shaper vise, Gripping work in. E. A. Dixie. *1028
Shapers, Large portable, at work—Morton shapers at Allis-Chalmers works. S. R. Stone. *770
Shapers, Two, with V and square gibs, Comparative tests. Entropy. 78
Queen City M. T. Co. *80
Shear and multiple punch, Combined, Bertsch. *553
Shear and punch, Covington. *757
Shear, Beam, and coping machine, Hydraulic, Watson-Stillman. *299
Shear, Beam, "Schulze & Naumann's. *344
Shear, Portable hydraulic, Jensch. *174
Shear, Punch and, German, Honer's. *260
Shear, Universal plate, bar and angle, Covington. *176
Shears for spring steel. C. E. Martindale. *335
Shears, Making handy tool from. 974
Shearing blanks. H. Harris. *1052
Shearing machine, Automatic, Bertsch. *176
Shelby seamless tubes, Making. R. S. Bayard. *599
Shells, Making in turret lathe. A. B. Mann. *837
Ship, Carnegie, Nonmagnetic. E. A. Dixie. *356
Shop, A one-man. C. A. C. 336
Shop equipment under conditions of business activity. 921
Shop-heating plants. W. H. Miller. 899
Entopy. 1143
Shop, Sammy's. W. Osborne. 145, 468, 643, 749
Shop, Trade-school. M. P. Higgins. 1103
Shops, Among the. J. R. Godfrey. 889, 897, 1138
Shops and other things, Building too well. R. E. Marks. 981
Shops, Electric driving of. A. M. B. 1056, *486, 842
Shrink-fit problem. G. J. Lemmens. *769
M. B. Stauffer. 963
J. R. Little. 1005
H. R. G. 1007
J. R. Godfrey. 1019
Siberia, Machinery trade. A. J. Wolfe. 702
Signal device, Crane. F. E. Sperry. *1090
Signals, R. R., Auto. S. B. Redfield. *278
(Mechanical signals vs. train orders.) J. O. Smith. 337
H. Jonson. 465
Size blocks, Convenient. H. E. Curtis. *500
A. L. Root. 710
Sizing block, Adjustable, Tip Top. *1015
Slabbing in Acme auto. screw machine. *90
Sleeves, Grinding internally. U. S. Garde. 420
"Slide Rule." J. J. Clark. †922
Slide rule, Precision, Mannheim. A. N. Lurie. *1034
Slides, Machine. J. Richards. *806
Sliding surfaces, Equal, Prof. Sweet's. W. Taylor. 582
Slotter, Horizontal, Colt Armory. *98
Slotter, 16-in., Alsatian, Grafenstaden. *568
Slotting and paring machine, Old, Bement's. *1120
Slotting attachment, Cutting internal gears with. C. Cloburn. 376

PAGE

Slotting attachment for the auto screw machine. C. Nosrac. *512
Slotting die blank in punch press. R. E. Roberts. 207
Slotting machine, Geared, Newton. *845
Small-arm requirements, Brit. army. 694
Smells, Commercial effect. 856, 1055
Smith-Premier typewriter, Building. *811
Smithers, Podunk. A. S. Atkinson. 203
Snap washer. J. B. Chipman. *576
Soap-wrapping and packing machine. *1132
Social side of industrial education. P. Kreuzpointer. *718
E. H. Fish. 1039
Socket, "Flatwist" drill, Cleveland. *136
Sockets, Ball, Boring. *320, *696
Song of dying swan. 254
Solder for aluminum. 186
"Soudure Autogene." E. Chatelain. †1.0
South America, etc., Trade. M. de Moreira. 35, 87, 137, 177, 262, 307
Southern Pac. shop appliances. *462
Spanner wrench for shafts. I. Cramp. *208
Special machine vs. special man. J. E. Sweet. 897
Speed-changing device, Gearless positive. H. M. Russell Jr. *783
Speed indicator, Brown & Sharpe. *633
Speed-indicator timing device, Weiss. *801
Speed, Influence of, on cutting action when turning. H. S. Millar. *818
Speed, Variable, gear, Pederson's. A. W. Jones. *67
Speed, Variable, invention. (Heat consumer.) B. J. 81
(Oil-pump principle.) H. Terhune. *337
Speed, Variable, countershaft, Moore & White. *42
Speed variator, Fluid-operated. A. Thompson. *45
Speeds, Motor, Standard, Proposed. 711
Speeds—Use of recording meter. *851
Speedwell Works. E. P. Buffet. 117
Spinning brass bowl by Chadwick Bros. *1149
Spinning, Rivet, machine, Grant. *512
Spirals, Cutting in disks in lathe. Chips. *499
Spirit level, Precision, Izard-Warren "Sterling." *1018
Splicing wire and other ropes. J. Watt. *1008
Spring device for limited space. G. W. Armstrong. *290
Spring pressure device and knockout. C. H. Brenton. *300
Spring-winding rig. M. F. Bates. *837
C. Carson. 1146
Springs, Alloy-steel. J. A. Matthews. 85
Springs, Comptometer, Making. *487
Springs for Colt pistol, Making. *99
Sprocket-tooth outlines and their relation to smooth driving. C. C. Myers. *263
Square, Adjustable. O. G. Simmons. *209
Square and protractor, Draftsman's, Kelsey. *847
Square, Bevel, Small. T. H. N. *1048
Square, Combination, kinks, R. S. William. *706
Square holes, Fixture for machining on press. C. J. Schaefer. *1098
Squares of numbers—Tables. W. L. and R. E. Tryon. (Insert at page) *1090
Squaring and dividing tool. *418
Staff-turning machine, Automatic, Waltham. *756
Stamps, Steel, Machine vs. hand work on. C. A. Coppack. *34
T. H. Kimber. 251
Staples, Tools for. W. L. Fuller. *459
Starters, Elec. Controller & Mfg. Co.'s. *218
Starting box, Water-pail. E. R. Filkins. *809
B. A. DeMuth. 964
Staybolts, Finishing, Penn. shop. *1084
Steam engine. See "Engine."
"Steam Tables and Diagrams." Marks and Davis. †470
Steamboat, Hulls'. E. P. Buffet. *161
Steel. See also "Hardening," "Annealing," "Welding," "Foundry," "Casting," etc.
Steel after quenching. M. Burmann. 294
Steel, Blue Chip, exhibition. *115
Steel, Carbon, tool, Annealing. T. DuPont. 440
Steel-cutting process, Oxhydric, Emergency use for removing wreckage. E. F. Lake. *910
Steel, Hardness and carbon contents. E. F. Lake. 210, 545
A. F. Shore. 505, 843
Steel, High-speed, Annealing. A. T. Sutton. 421
W. G. Groocock. 810
Steel, High-speed, in Sammy's shop. W. Osborne. 145
(Shop testing.) B. J. 468
(Wagner practice; French count as salesman, etc.) C. B. Lord. 749
Steel, High-speed, Specifications for buying. *1001
Steel, Manganese, safes, Ely-Norris. *888, *893

PAGE

Steel, Melting from interior. E. A. Dixie, A. W. B. 124, 465
Steel, Mild, Reason of failure. 876
Steel mill, First, in South America. 668
Steel, Physical test in Parker Bros.' gun shop. E. A. Dixie. *122
Steel, Tool, Carbon, Buying on specifications; analysis; table of classes for various purposes etc. J. M. Drake. 198
Steel, Tool, specifications, U. S. Navy. H. Williams, 187
—Editorial. 631
Steel, Value of AMERICAN MACHINIST for treatment of. 463
Steel wire, Making. F. H. C. *1115
Steels, Alloy, for motor-car construction. J. A. Matthews. 82
(Comment on forging and hardening steel.) C. U. Scott. 338
Steels Hardening and cooling speeds. W. Osborne. 77
(Critical points.) M. Cowan. 252
(Quenching temperature.) C. U. Scott. 544
Steels High-speed English vs. American. W. G. Groocock. 421
C. A. Holdridge. 546
Steels, High-speed. J. M. May. 540
Steels, High-tension, Properties of. P. Longmuir. *740
Steels, Sheffield, Newer—Jessop; Strong; Darwin & Milner; se of Vanadium I. W. Chubb. 264
Stock, Stop, for press tools. V. E. Walters. *1003
Stops, Multiple, for engine lathe, Lodge & Shipley. *886
Storage, Materials, Nordberg foundry. *56
Straight edge, Knife-edge, made from old razor. F. J. B. *372
Straightening machine tables. J. E. Sweet. 81
Straightening Shelby seamless tubes. *605
Strainer holes, Producing. L. S. F. *744
Strength of flat plates supported on edge. A. L. Pratt, Con Wise. 124
Messner. *918
"Stresses in Roof Trusses, Table of." H. C. Hearne. †424
Stresses, Problem in. I. G. Norman. 749
S. M. Woodward, J. S. Meyers. 1053
Stud, Ball expansion drive. *1011, 1012
Stud driver, Power, with automatic release. J. Crosby. *289
J. W. Ellison. *879
Stud extractor for turret lathe. R. Stephens. *34
Stud-releasing device for flat turret lathe. *543
Stud, Small, Making on auto. screw machine. P. W. Abbott. 171
Studs in boiler washout doors, Threading. R. Brown. *539
Stuffing boxes, Turret-lathe substitute for machining. J. T. Crosby. *503
Subpress. See "Press."
Support, Outboard, on rack cutter. E. A. Dixie. *336
Supports, Machine. Entropy. 169
Supporting devices for auto. turret-machine work. G. J. Jehle. *334
Surface plate, Babbitting on. M. E. Dawson. *1093
Surfacing machines, Adamite. *132
Swapping machine tools. R. E. Marks. 866
Sweeps, Change-gear, Boring. *626
Sweet's, Prof., equal wearing surfaces. W. Taylor. 582
Switches, R. R., Auto. S. B. Redfield. *278, 337, 465
Syfrig, Alfred—Address wanted. 424
System, Perfect, and Jerry Wise. J. H. Vanpleasanter. 808
Con Wise. 1057

T

T-bolt, etc., Adjustable, Red Wing. *757
T-slot mills, chuck for. W. Ochse. *1121
T-wrench, Adjustable. W. D. G. *746
Table, Autogenous Welding Co.'s. *92
Table, Concave, Shaper rig for machining. T. H. May. *46
Table, Drafting, Multiple. L. E. Dudley. *250
Table, Drafting, Washburn Shops'. *717
Table, Repair, Pneu. W. H. Snyder. *413
"Tables and Other Data." C. E. Ferris. †799
Tables, Machine, Straightening. J. E. Sweet. 81
Tailstocks, Graduating. Entropy. 79
Tang troubles. Machinist. 421
Tangs, Drill—Sellers proportions. *26, 252
Tangs, Taper socket, Milling fixture. S. R. C. *1142
Tanks, Automatic, American. *456
Tap, Adjustable. H. E. Chittenden. *1094
Tap-fluting fixture, Remington shops. *936
Tap-threading drill press, Hoefer. *259
Tap continued after "Tapered."
Taper gage, 4-leaved, Starrett. *382
Tapers, Acute, Turning. C. R. McGahey. *503
G. Cockle. *1053
Tapered holes, Punching in one operation. L. S. F. *744
J. E. Sweet, W. B. Greenleaf, C. Eisler. *1005
Tapper, Friction-drive compensating-feed, machine. J. Crosby. *448
Taps, Cutting to allow for shrinkage in hardening. F. C. Mason. *1141
Taps, Mandrel for threading inserted blades for. T. A. Wallace. *913
Taps, Square-thread, Notching. W. G. Groocock. *333
L. Tabor. *962
Tapping and reaming machine, Special 3-head, Niles-Bement-Pond. *520
Tapping attachment, Cincinnati-Bickford. 676
Tapping chuck, Thompson. *1109
Tapping machine and radial drill, W. E. Gang. *927
Tapping machine, Auto., Smith-Premier factory. *814
Tapping rig, Engine-base, Franklin auto. *657
Tariff commission, etc., British. A. J. Wolfe. 429, 508
Tariff, New, Machinery and metals. 306
Tariff reduction on machine tools. 423
Technical education. See "Education."
Telautograph, Gray. S. B. R. *1079
—In machine shop of Stanley-Flagg Co. A. L. Pratt. *496
Telegraph, First. E. P. Buffet. 117
Telephone, Estimating by. Terry. 474
Telephones, Shop, Western Elec. *92
Temperature-control instrument, Am. Gas Furnace Co.'s. E. F. Lake. *1151
Tempering bath, Oil, Electrically heated. General Electric Co.'s. *802
Tempering records. H. L. Kohr. *708
Templet-cutting machine, Bonvillian & Ronceray, Results of. H. P. Anderson. *293
Templet, Hexagon. J. Watt. *1095
Test. See also "Indicator," "Gages," "Steel," "Power," "Hardness," "Gearing," etc.
Test bars, Cast-iron. A. F. Nagle. *1088
Tests, Strength, of cast iron. E. A. Anderson. 948
Testing fixtures—Lanston Monotype. *111
Testing Franklin auto. mechanism. *662
Testing Hendey-Norton lathe parts. *225, *325, *629
Testing—Neubabelsberg laboratory. *437, *1122
Testing of steel, Shop. W. Osborne, B. J., C. B. Lord. 145, 468, 749
Things usually wrong—Wearing surfaces. 582
Thompson, J. W., Death of. 214
Thread. See "Screw," "Tap."
Three interesting small machines. Am. Watch Tool Co.'s. *678
Time telling by auto machinery. S. B. Redfield. *557
Timing device, Speed indicator, Weiss. *801
Tire-boring mill, Horizontal. Breuer, Schumacher & Co.'s. *1018
Tires, Auto., Making. S. B. Redfield. *191
Tires, Locomotive, Carriers for. *462
Toggle joint. H. Terhune. *857

TOOL.

See also "Machine tool," "Cutter," "Steel," "Hardening," Centering," "Press," etc.
—Arc-turning tool. A. N. H. *208
—Boring and facing tool. D. Brown. *626
—Boring tool and reamer, Combined, Cleveland. *135
—Boring universal-joint hanger, Special tools for. M. Dawson. *261
—Box tools, etc., for gear making by Kempsmith Mfg. Co. *782
—Burnishing tool for driving axle journals. E. N. Owen. *462
—Box tools for staybolts. *1085
—Burring tool. Cy. Press. *1142
—Buying tools from dealers. Entropy. 714
—Carriage for special work. Chipman. *951
—Chips, Tool for making. C. Hyden. *1142
—Dividing and squaring tool. L. T. Cook. *418
—Facing tool, Adjustable, inside, for drill press. C. Eisler. *958
—Four new Starrett tools—Telescoping gage for holes; gage with four tapered leaves; set of buttons for locating holes; double scratch gage. *382
—Gooseneck tool. G. J. Murdock. *463
—Grinder, Single-wheel, Sterling. *93
—Holder, Jig-boring tool, Adjustable. P. Campbell. *1049
—Holders, Tool, O. K., Forging cutters for. P. H. Robinson. *179
—Internal threading tools. A. K. Guild. *417
H. Chinn. *881
—Jig-boring tool. L. E. Salmon. *208
—Lapping tool edges. J. O. Surface. 875
—Lubricant, Action of. A. H. A. 335, 628, 750, 789, 790, 1055, *1068
TOOL.
—Nurling tool, Bench-lathe. B. L. *1140
—Nurling tool, Turret. J. Bailey. *110
—Planer, Tool for parting pieces on. J. T. Towlson. *1051
—Post, Tool, for heavy work. A. J. Clarke's. E. A. Dixie. *785
—Roughing tool, Boring and holder for monitor lathe. J. K. Peters. *1110
—Thread-cutting tools, Making. A. R. White. *928
—Thread-tool grinding and gaging fixtures, Remington shops. *937
—Threading-tool holder, Spring, Flannery's. *576
—Tool-holding head, Universal, for grinder, Brown & Sharpe. *967
—Tool post, Novel, Robinson. *428
—Tool-rest stand for pattern shop. J. Brown. *621
—Tools, Press, Self-registered. H. Harris. *787
—Toolmaking accuracy without buttons. W. J. Kaup. *505
G. Hess. *840
—Tube-finishing tools. G. Hess. *163
—Turning tool for wood or fiber. E. A. Dixie. *20, 629
L. L. Arnold. 376
—Turret-lathe tools. C. R. McGahey. *362
—Turret tool post, Multiple. *426
Tooth. See "Gearing," "Sprocket."
Torch, New fusion-welding, and how to weld different metals. W. I. Reich. *1147
Torch, Oxy-Carbi Co.'s. *989
Torch, The Volcano. *257
Torch, Welding, Fouché. *858
Torpedo, a machine-shop triumph—Bliss-Leavitt torpedo. S. Aronson. *645
F. W. Brady. 961
Trade, Machinery, British. A. J. Wolfe. 286, 429, 508
Trade opportunities. M. de Moreira.
—Latin America. 35, 87, 137, 177, 262, 307
—Australia and Tasmania. 346
—Japan. 388, 430
—China, Manchuria. 472, 547
—India. 636
Trade school. See "Education."
Trade, Machinery, Siberia. A. J. Wolfe. 702
Trade—Selling abroad. A. J. Wolfe. 638
Train stops, Automatic. S. B. Redfield; J. O. Smith; E. Johnson. *278, 337, 465
Transferring holes. W. Whitley. 31
(Scriber; drill.) E. A. Dixie. *81
E. W. H. 170
Transmission devices, Interesting, Wheaton's — Self-oiling bearing; hanging shafting in high room; pulley with internal clutch; friction-cone drive from main line shaft; novel loose pulley. *342
Traverse Rapid, power, on machine tools. 470
Triangle for laying out flat-head screws. W. G. Young. *373
Triangle kink. A. Folk. *839
Trip, Auto., Printing-press feed. *3
Triumph Elec. Co.'s. Oakley plant. 760
Truck, Charging-car transfer. *59
Truck, Shop, Handy. F. J. B. *501
Truck, Shop, with interchangeable upper decks. C. J. Fry. *1139
Trussed constructions, Simplicity of. Cantilever. *836
Tube, Brass, Riveting. Jack Jnr. *1096
Tube-cutting machine, Ryerson. *1109
Tube ends, Upsetting. C. Brecht. *421
Tube-forming dies. A. B. Card. *839
E. Verd. *1055
P. P. Monfils. *1099
Tube-grinding machine, Adamite. *132
Tubes, Conical, Brazing. B. A. De Mutte. 169
Tubes, Large, Bending. Tube Bender. *1000
Tubes, Shelby seamless steel, Making, by Natl. Tube Co. R. S. Bayard. *599
Tubes, Small hardened steel, Finishing. G. Hess. *163
Tubes, Steel, Chart for strength. *528
Tubing, Thin, Sawing. P. J. A. 875
J. A. Raught. 1146
Turbine blades, Cutting on engraving machine. *538
Turbine dynamometer, Herschell-Spillman. *885
Turbine of Bliss-Leavitt torpedo. *648
Turbine, Steam, Avery. 590
Tubine, Water, J. C. Wilson & Co.'s. *725
Turbine vs. combined reciprocating and turbine steam sets—Furness' yacht. 361
"Turbines, Steam." H. E. Collins. †39
Turning. See also "Lathe," "Screw" (subentry "Screw machine,") "Crankpin," "Tool," "Staff," etc.
Turning curved typewriter bar. *816
Turret. See also "Lathe" and "Screw" (subentry "Screw machine,") "Tool," "Nurling," "Chuck."
Turret-machine work, Automatic, Supporting devices for. *334
Turret, Milling-machine, Funk Mach. Co.'s. *998

PAGE

Turret, Milling-machine, Time saver for. J. H. Johnson. *958
Turret Small tilted, Wood. *1061
Turret substitute for speed lathe. E. A. Dixie. *876
Turret tool post, Multiple. *426
Turrets, Types of, for screw machines and turret lathes. C. L. Goodrich. *737
Type-cylinder gears. *55
Type making, Automatic. W. J. Kaup. *1042
Typewriter, Ball-bearing, Building—Smith-Premier. *811
Typewriter-ribbon spools, Riveting. G. Wulfruna. *375
Typewriter-shop tools, Hammond — Making rubber shuttles; indexing and drilling jig, etc.; forming and assembling punch and die for card-holder leaf. J. P. Quinn. *353, *414
Typewriters, Remington, Tools for making. *931

U

"Under reamers," Making. C. Ashley. *452
United Kingdom, Machinery trade, 1908. A. J. Wolfe. 286
U. S. Geol. Survey's coal analyses. *410
U. S. Signal Corps Aeroplane. *301
U. S. Steel Corps.'s accident prevention. *331
U. S. Steel Corp. wire making. *1115
Unloading R. R. cars by machinery. S. B. Redfield. *309
F. C. Perkins. *490
(Hudson Riv. Coal Co.'s.) M. H. Ball. *877
Unnecessary accuracy. 377, 433, *842, 981, 1019
Upsetting tube ends. C. Brecht. *421
Uruguay, Trade. 87

V

Vacuum bottle, Problem. C. M. Ripley. 139
(Vacuum experts.) Conan. 505
C. Deutsch. 842
Vacuum motor, Baldwin Piano Co.'s. J. C. Lelaine. *992
Vail family and Speedwell Works. E. P. Buffet. 117
Valve, Acetylene back-pressure, Linde. *861
Valve, Automobile, Reduction, Machining. *373
Valve bodies, Indexing turret chuck for. *285
Valve bolts of pumps, Wanted mixtures for. J. P. L. 1094
Valve, Gate, Large, Machining on small planer. W. S. Sherman. *9
Valve grinder for Franklin auto. *660
Valve-repair job. W. Osborne. 367
Valve, Semi-balance, Homemade. R. A. Anderson. *367
Valves and pipes are, Know where. 715
Valves, Gate, Cost of mfg. in municipal machine shop—Boston Water Dept. *774

PAGE

Valves, Gate, High-pressure, Pelton, for salt water, San Francisco. G. J. Henry, Jr. *705
Valves, Premier auto., Grinding. *369
Van Arsdale, R. M., Death of. 1013
Vanadium steels. J. A. Matthews. 82
Variable speed. See "Speed," etc.
Varnish pot, Patternmakers', Lowell. J. Watt. *1027
Vinci, Leonardo da. E. P. Buffet. *731, *821, *868
Vise jaws, Wooden. J. O. Surface. *1049
Vise, Shaper, Gripping work in. E. A. Dixie. *1028

W

Wages, hours, cost of work. E. A. Dixie. 589 919
Waggoner, W. W.—Special man. 897
Wagner plant Premium system. 200
Wagon carriers for loco. work. *462
Washer, Snap. J. B. Chipman. *576
Washers, Ball-thrust, Proportions. O. Savillion. *355
Washers, Drill jig for. M. Goldberg. *286
Water-cooling arrangement, Novel. T. K. Powrie. 498
Water-pail motor starter. E. R. Filkins. *809
B. A. DeMuth. 964
Water supply for grindstone. G. L. Colburn. 974
Water turbine, J. C. Wilson & Co.'s. *725
Water—Wave motors. J. Richards. *865
Watt, Jas., & Co.'s back gearing. 504
Wave motors. J. Richards. *865
Wearing surfaces, Harder, for American machine tools. 752
Wearing surfaces, Prof. Sweet's. W. Taylor. 582
Welder, Electric. R. F. Williams. *1040
Welding. See also "Cutting."
Welding aluminum wire with gas torch, Cowper-Coles machine. *135
"Welding, Autogenous" (in French.) E. Chatelain. †470
Welding, Autogenous, of metals. C. B. Auel. *858
Welding, Fusion, apparatus and work —Oxy-Carbi Co.'s. E. F. Lake. *988
Welding, Fusion, New torch, and how to weld different metals. W. I. Reich. *1147
Welding, Fusion, with liquefied lighting gas—Blau process. A. Gradenwitz. *431
Welding metals with electricity—Thomson and Toledo machines. E. F. Lake. *233
Welding outfit, Flame, Schaap. *296
Welding outfit, Small, Autogenous. Davis-Bournonville. *42
Welding, Oxy-acetylene, Development of. H. Cave. *521
Welding—Repair of machine-tool parts, by Autogenous Welding Equip. Co. with Davis-Bournonville oxy-acetylene torch. H. Cave. *434
Welding table, Autogenous Welding Co's. *92

PAGE

Wheel, Car, grinding device, Norton. *730
Wheel, Car, lathe, Sellers. *40
Wheel, Driving, Connecting rod that works through. M. H. Ball. *501
Wheel fits, Obtaining accurate records. *391
Wheel press, Elec. hyd., Western Elec. *846
Wheel press, Large, Gardner. *924
Whetstone holder. A. Neilsen. *585
Whitworth worm-gear hobber, Early. *656
Williamson free school of trade. 939
Windmills, Ancient, on Cape Cod. S. B. Redfield. *681
H. P. Fairfield. *960
Wire, Electric welding of. *238
Wire feed, Screw-machine, Wells. *924
Wire, Finished steel, From pig iron to —American Steel & Wire Co.'s methods. F. H. C. *1115
Wire, Rolled, How can it be kept straight? W. Edge. 670
Wire, Screw, Chart for. *952
Wiring work for hardening room. A. C. Lindholm. *1002
Work holder, Professor Sweet's. *454
Wood-turning tool. E. A. Dixie. *20, 629
L. L. Arnold. 376
Worcester trade school. Entropy. 205
—Buildings. E. H. Fish. *651
Workmen's compensation in England. 973
Worm and gear cutting machine, Schütte. *800
Worm gear, Cutting without hob. E. S. C. *418
W. Gribben. 587
E. M. Davids. 961
Worm-gear tests. G. E. Quick. *322
Worm gears. J. R. Godfrey. 939
W. P. Hunt. 1144
Worm-gearing troubles and remedy. J. Wilson. 289
H. Sibbering. 792
Worm screws, Pattern and rigging for molding. *596
Worm-wheel hobber, Old, Whitworth. *656
Worm wheel, 16-inch, and its worm, Cutting in lathe, at Builders' Iron Foundry. *485
Worm wheels, Testing. A. C. Wild. 1057
Worms, Table for calculating pitch diameters of. J. B. 1049
Wrapping and packing machine. S. B. R. *1132
Wreckage removal with oxhydric process. E. F. Lake. *910
Wrench, Quick-acting, Wright. *847
Wrench, T, Adjustable, Blaysdell's. W. D. G. *746
Wrench attachment for pipe, Ajax. 177
Wrench for pattern shop. J. Brown. *621
Wrench, Spanner, for shafts. I. Cramp. *208
Wrenches, Four new, Ducharme. *1108
Wrenches, Room required for. Silent. *416
Wrinkling device, Paper. *1
Wristpin, Bent. Truing. H. E. Curtis. *461, 627
Writing, Transmission by machinery. S. B. R. *1079
A. L. Pratt. *496
*461, 627
Wrong, Things usually—Wearing surfaces. 582